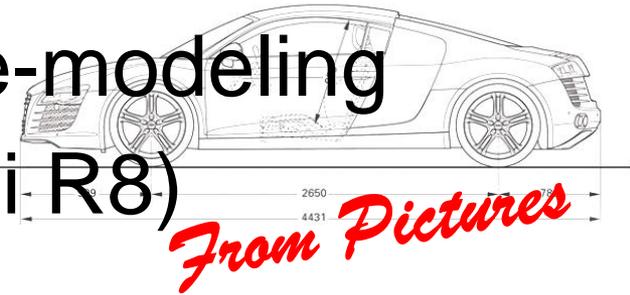


CATIA V5 Surface-modeling

(Tutorial 8- Rebuild Audi R8)



Not For Commercial Use



Surface-modeling

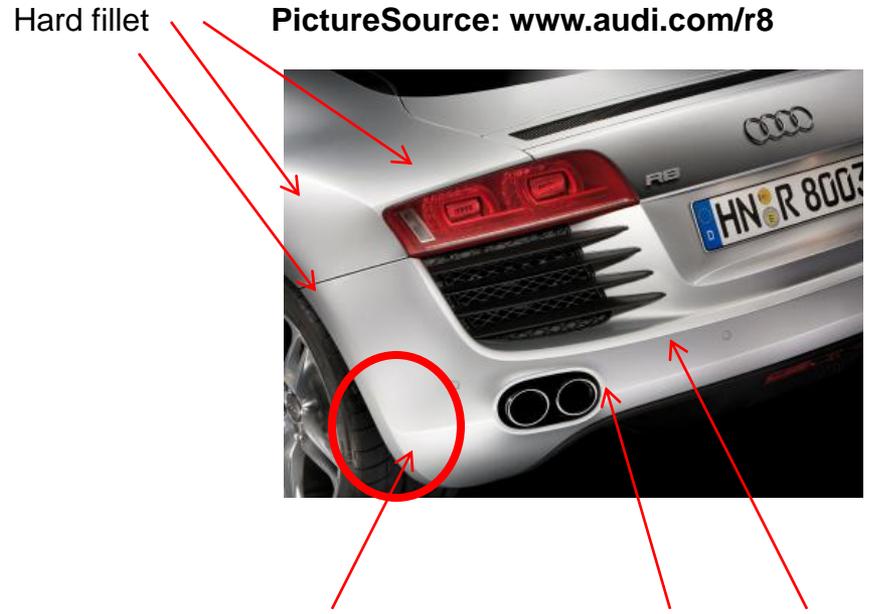
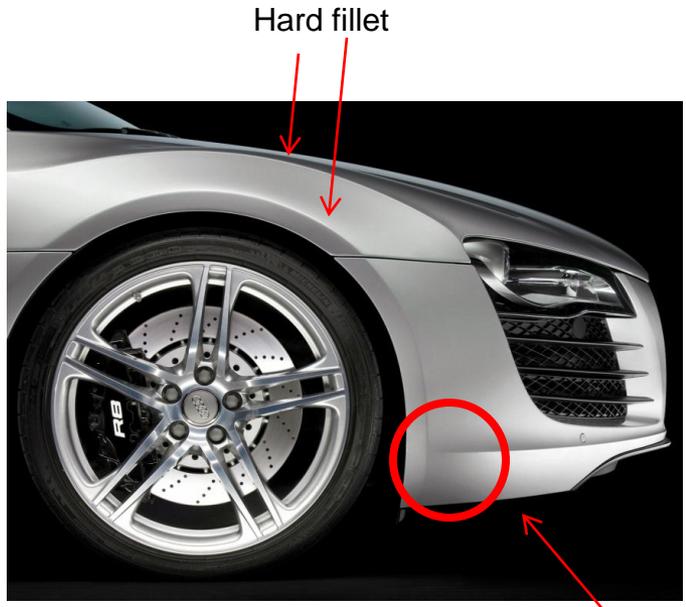
Design with a Master Model

Design in Context

A- 1

Design Intent

PictureSource: www.audi.com/r8



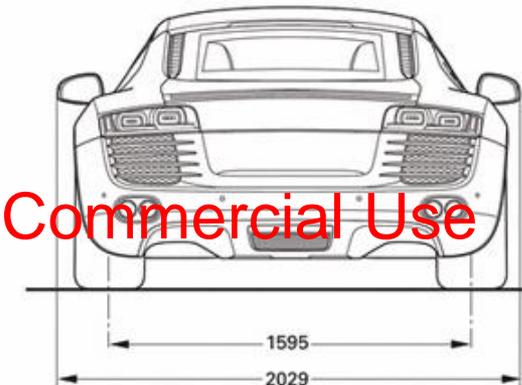
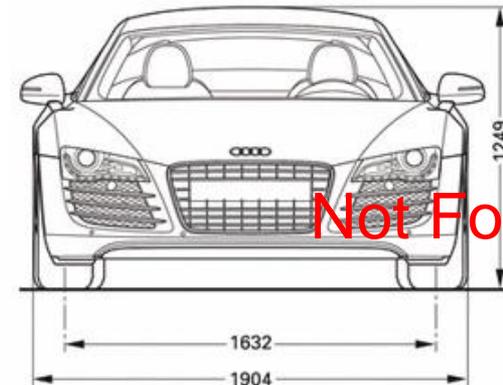
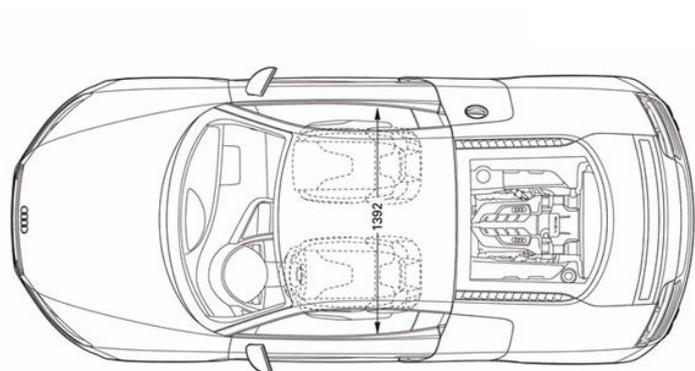
Fillet disappears

Fillet disappears

soft fillet Hard fillet

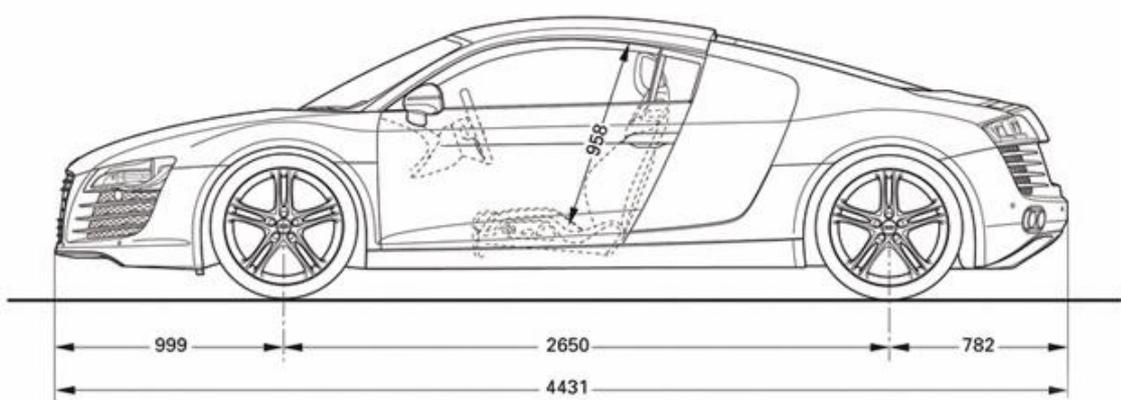


A- 2

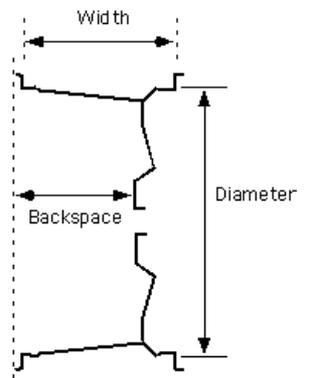


Not For Commercial Use

Wheelbase = 2650
 Length = 4431
 Width, Max w/o mirrors = 1904
 Height = 1249
 Tread Width, Front = 1632
 Tread Width, Rear = 1595



Front Wheel Size (in) = 19 x 8.5
 Rear Wheel Size (in) = 19x 11.0
 Front Tire Size = P235/ 35R19
 Rear Tire Size = P305 / 30R19



A- 3

Tutorial 8A

- Insert 2d pictures and reposition them on offset planes
- Create 3D control curves

Tutorial 8B,C, D

- Create the front body of the master model
- Create the middle body of the master model
- Create the rear body of the master model
- Create parting surfaces

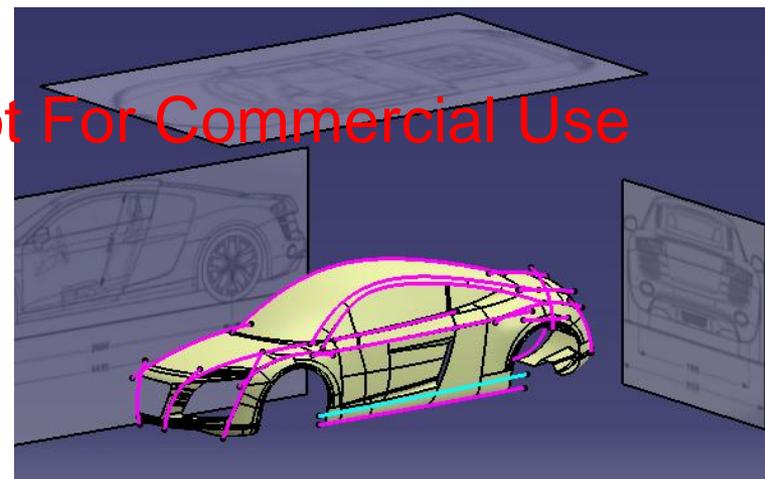
Tutorial 8E

- Split the finished (master) model into separate parts
- Build more details on each part

Tutorial 8F

- Reassemble them together

Not For Commercial Use



Please be reminded that this series of tutorials is designed to demonstrate a design approach with CATIA, rather than the command itself.

Tutorial 8A

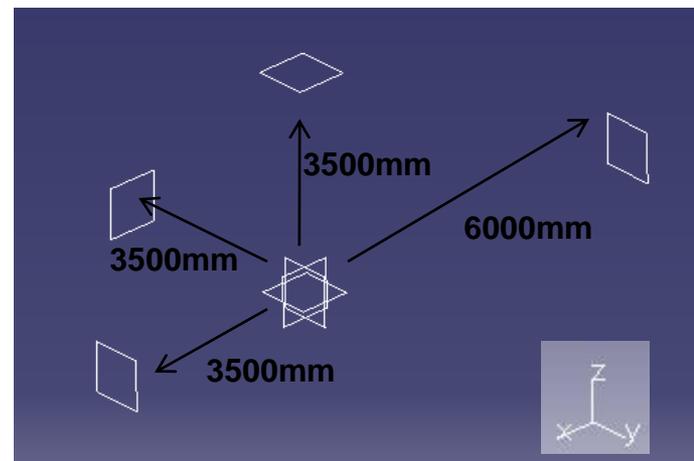
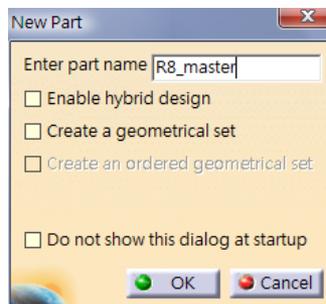
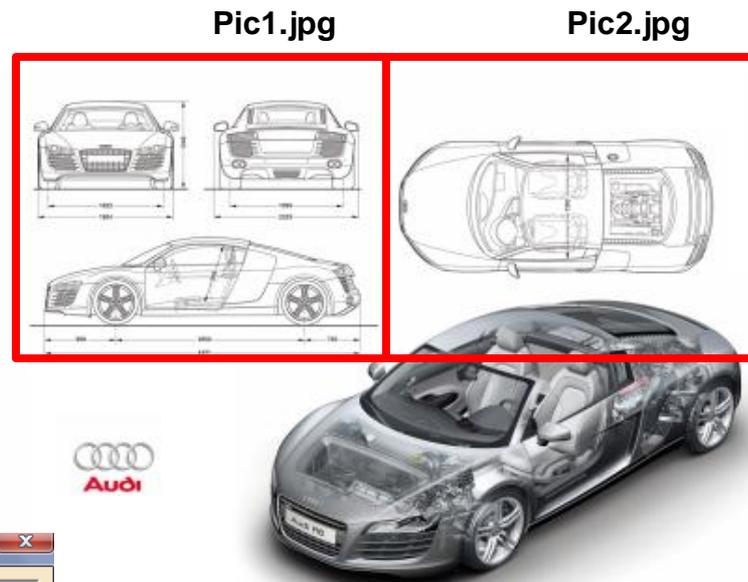
- Create a new project folder (e.g. C:\Car_R8)

Before Start:

<http://models.audiusa.com/r8>

- Crop the picture (972.jpg) into two jpeg files in a square size (just extracting four views: front, left, top & back)
- Save the files into the project folder

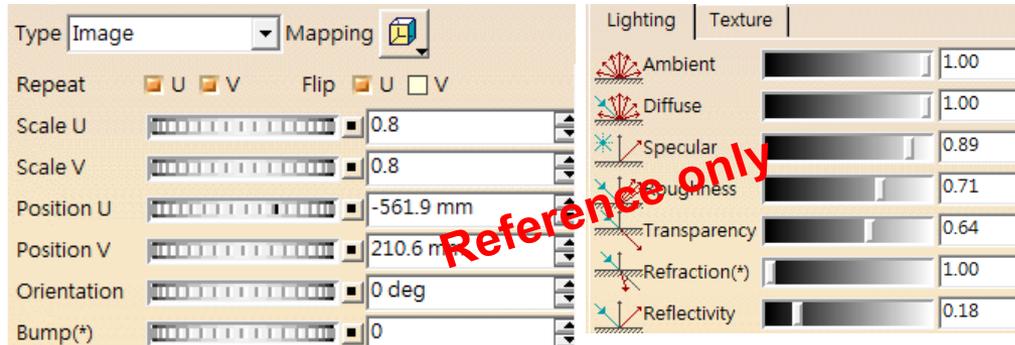
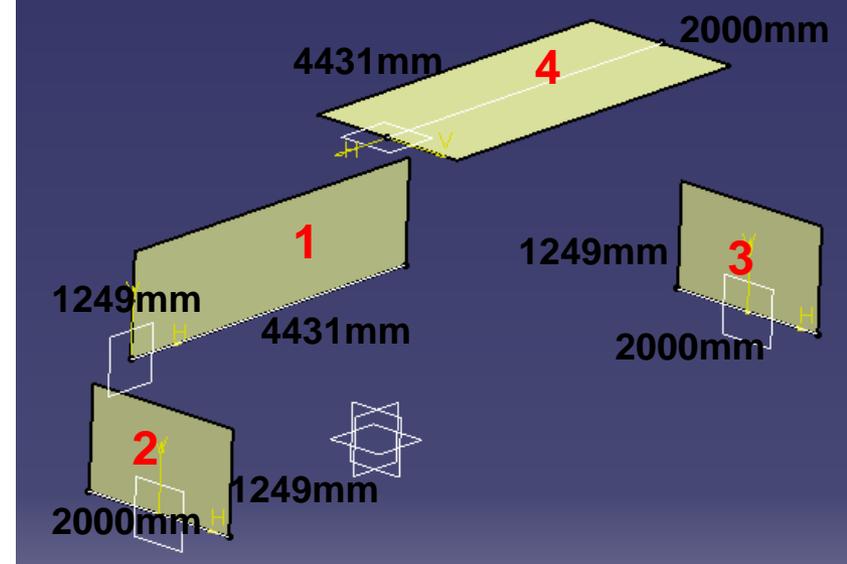
- Start CATIA
- File/New/ Part
- DO NOT SELECT “Hybrid Design”
- Switch Workbench to Generative Shape Design
- Insert a geometrical set “reference”
- Create 4 offset planes



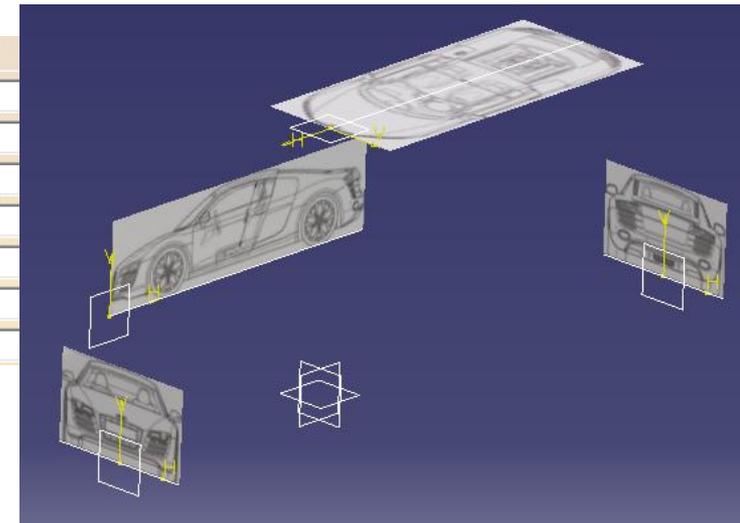
A- 5

Tutorial 8A

- Create 4 Extruded Surfaces on offset planes
- (4431mm x 1249mm , start from origin)
- (2000mm x 1249mm , symmetric)
- (2000mm x 1249mm , symmetric)
- (2000mm x 4431mm , start from origin)
- Apply any material onto each surface, then change the texture to our prepared jpeg files (pic1. jpg or pic2. jpg)
- Scale & Position the image to match the surface's size

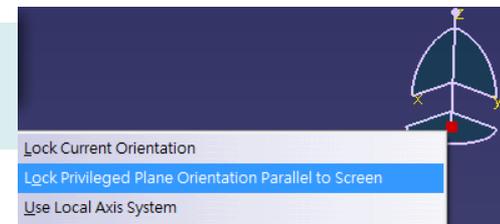


- Make them semi-transparent
- **Set the Geometrical set “Reference” to “Unpickable”**

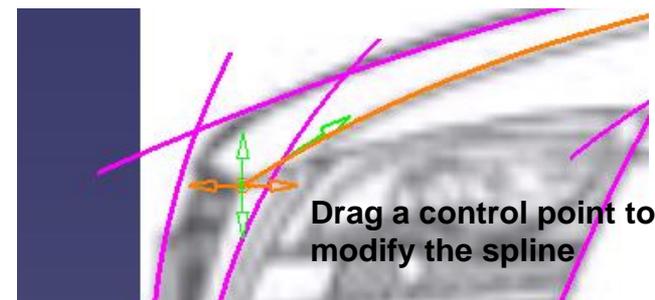


A- 6

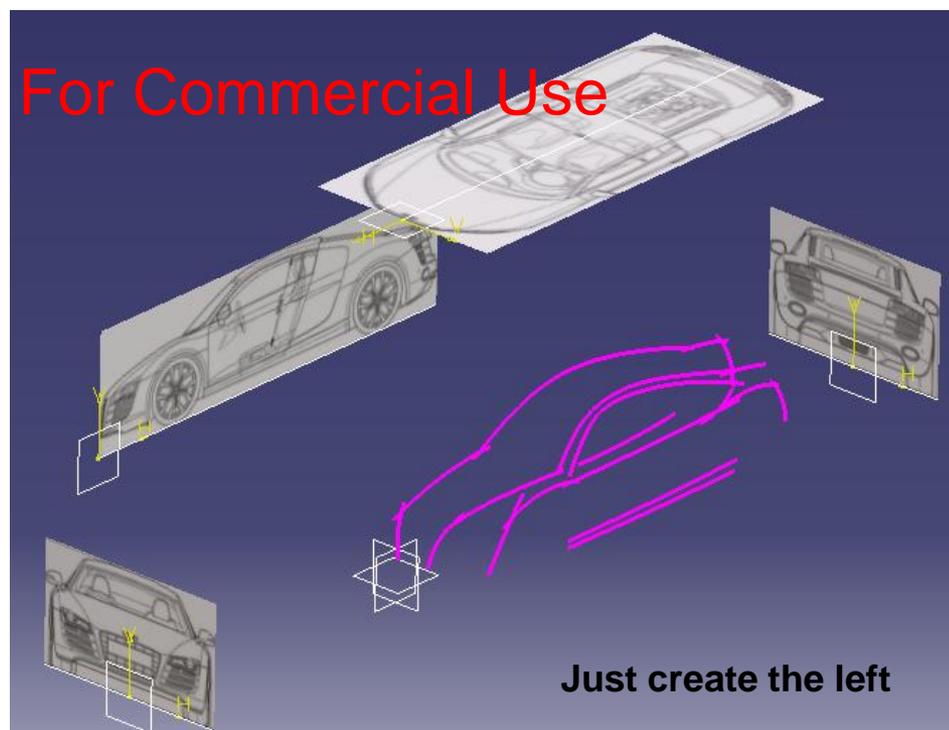
Tutorial 8A



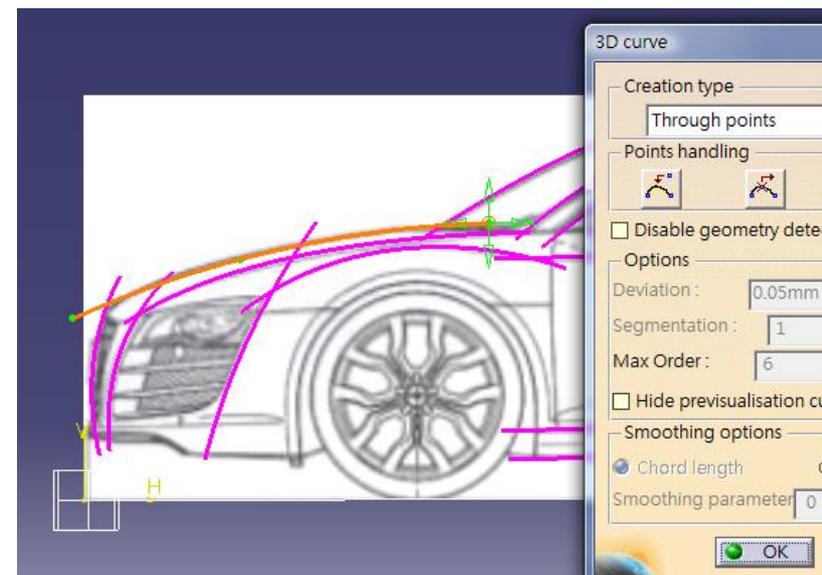
- Switch workbench to “Shape/ Freestyle”
- Insert a NEW geometrical set “control_curves”
- Set “Lock Privileged Plane Orientation Parallel to Screen” on compass
- Create some 3d curves (left side only)
- No curve blending or trimming
- Thicken the curves and change color to PINK



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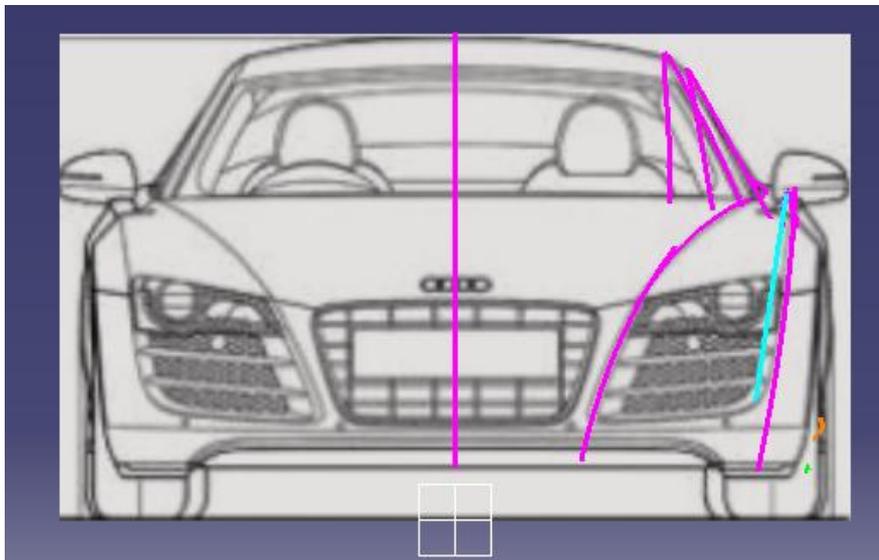
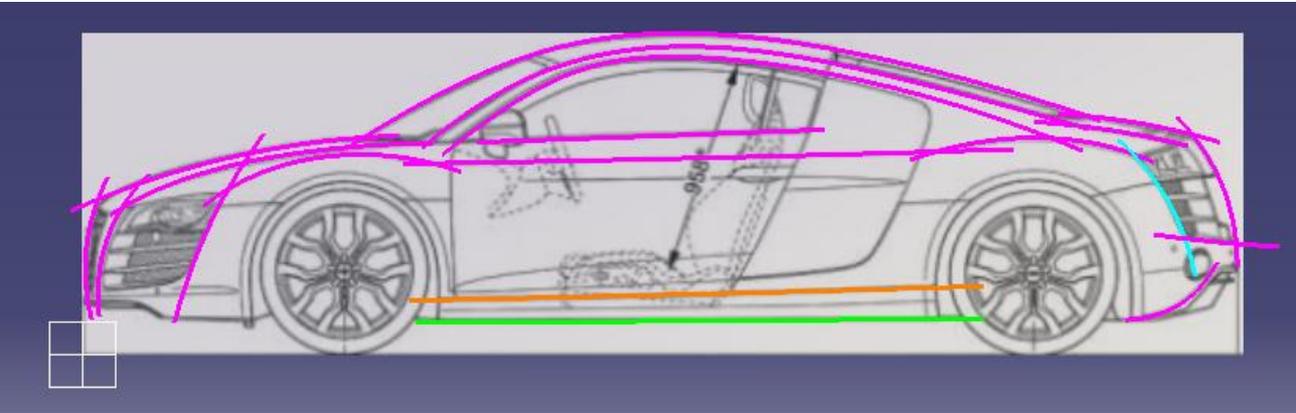


A- 7



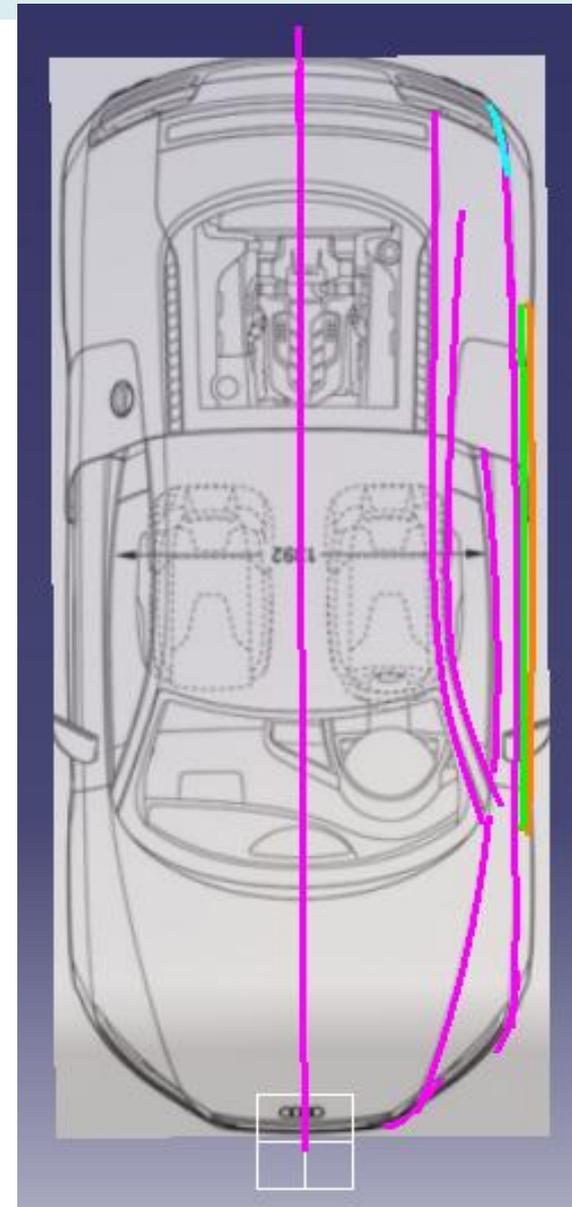
Use minimum number of control points to create a spline

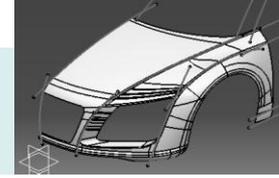
Tutorial 8A



**Total
19 curves**

A- 8



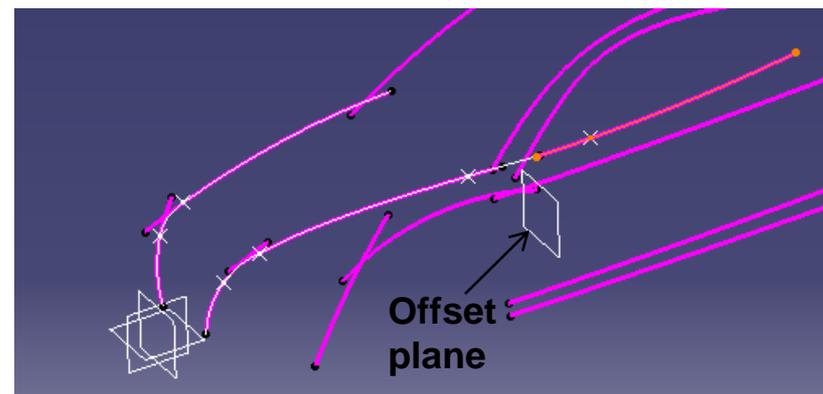
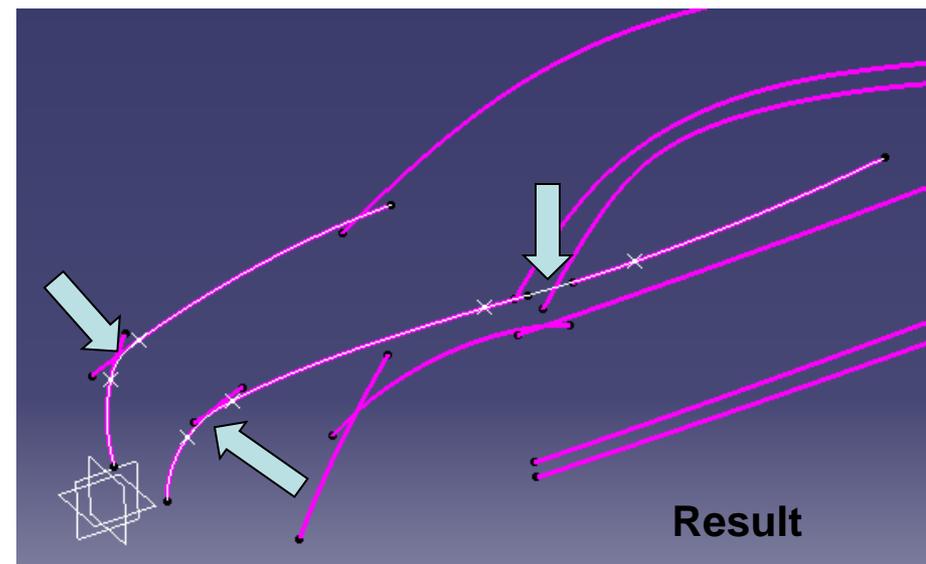


Front Body

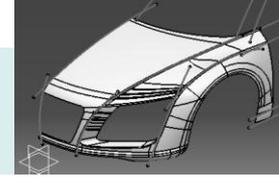
(master)

Tutorial 8B

- Switch workbench to “Generative Shape Design”
- **Insert a NEW geometrical set “Front_body”**
- Make a point on curve
- Make an point on the neighbor curve
- Connect curve (curvature continuous, trim elements)
- Adjust the points to get a smooth trimmed curve
- Complete the above steps to make two more trimmed curves (as shown)
- Create an offset plane
(Reference YZ plane, Offset 1495mm)
- Split the trimmed curve into two



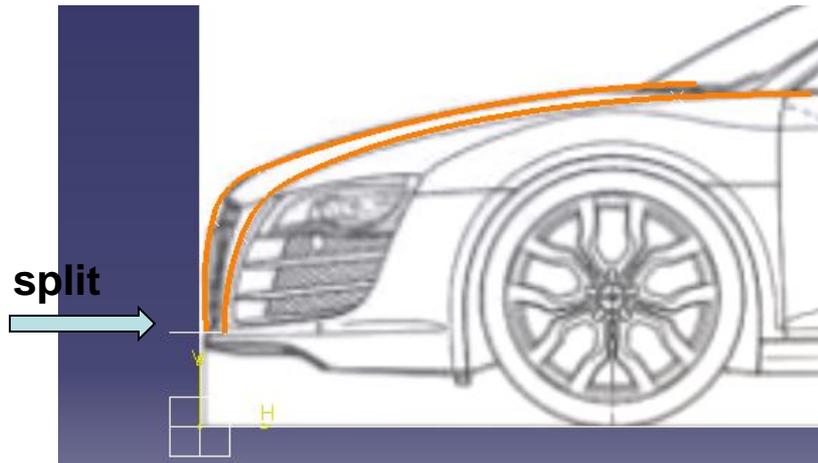
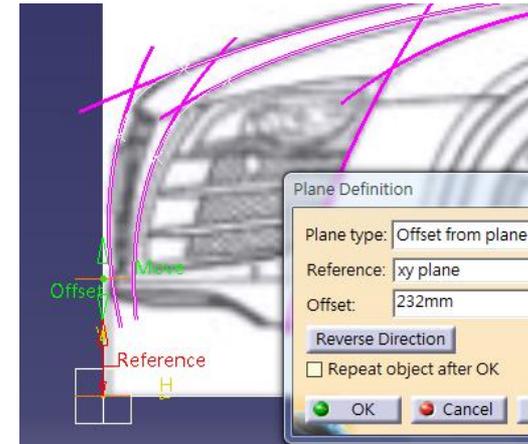
A- 9



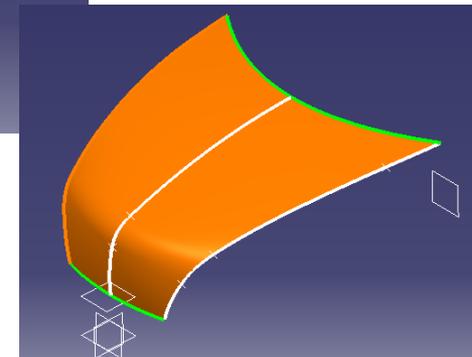
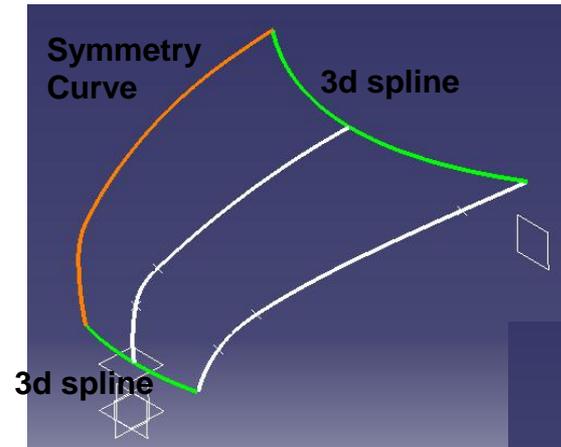
Front Body (master)

Tutorial 8B

- Create an offset plane from the bottom
(Reference xy plane, Offset 232mm)
- Split the curve by the plane (to remove the bottom portion)
- Split another curve (to remove the bottom portion)

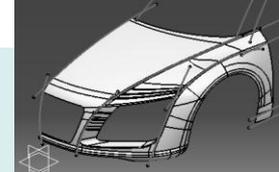


- Mirror the curve
- Create a 3d spline (linking 3 endpoints)
- Create another 3d spline
- Create a multi-sections surface



Front Body (master)

Tutorial 8B

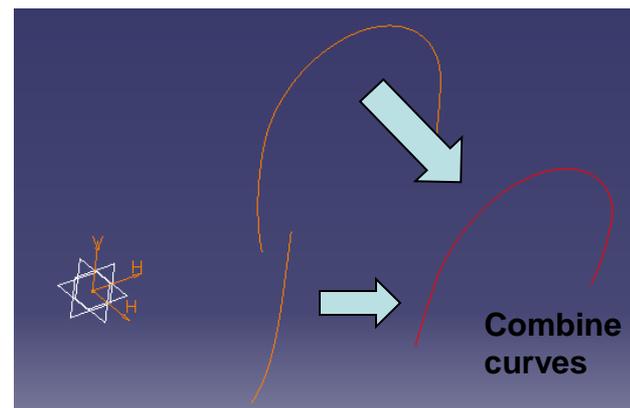
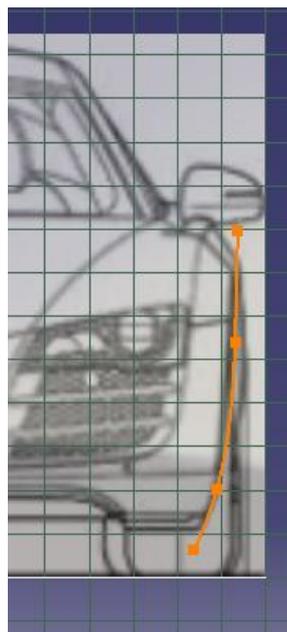
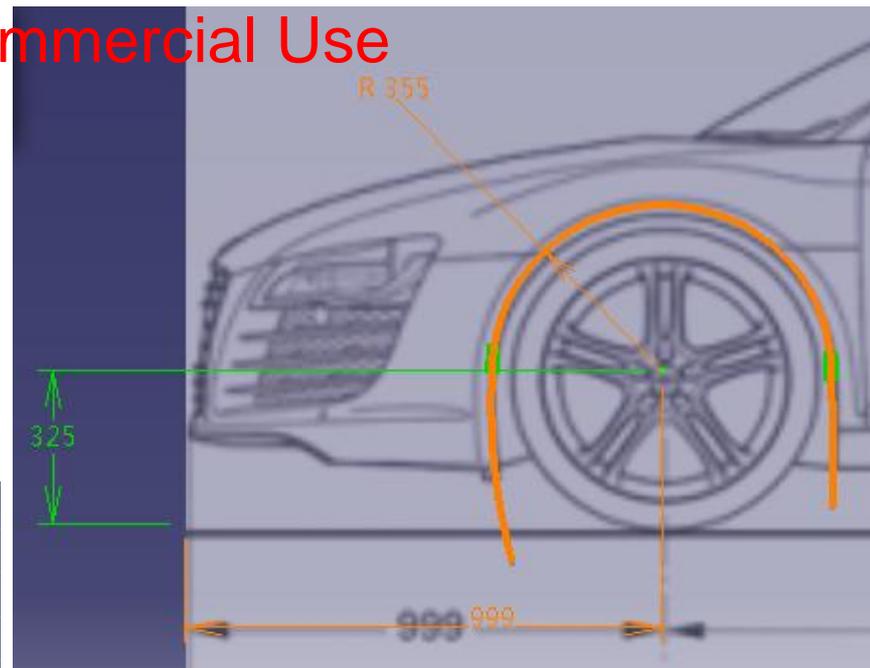


- Create a sketch
(on XZ plane, right view)
(three arcs, tangency continuous)

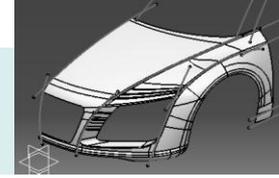
Not For Commercial Use

- Create another sketch (YZ plane, front view)
 - Draw a spline

- Create a Combined curve

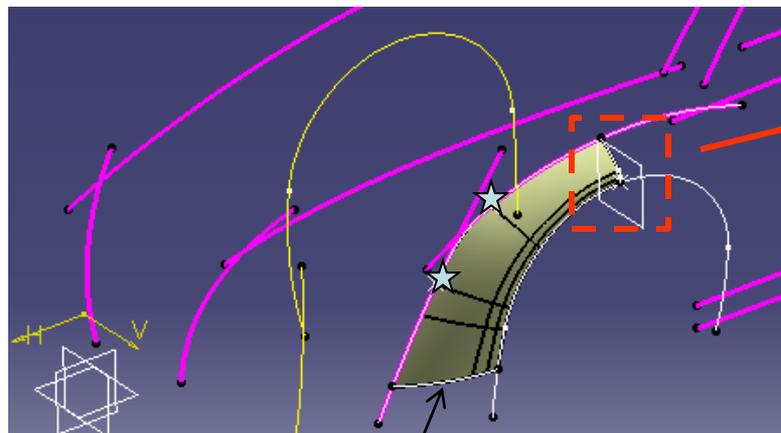
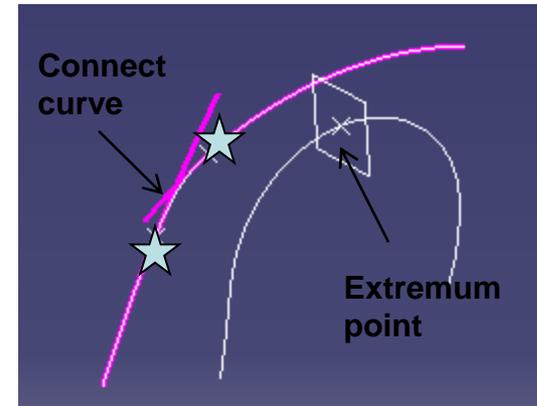


A- 11



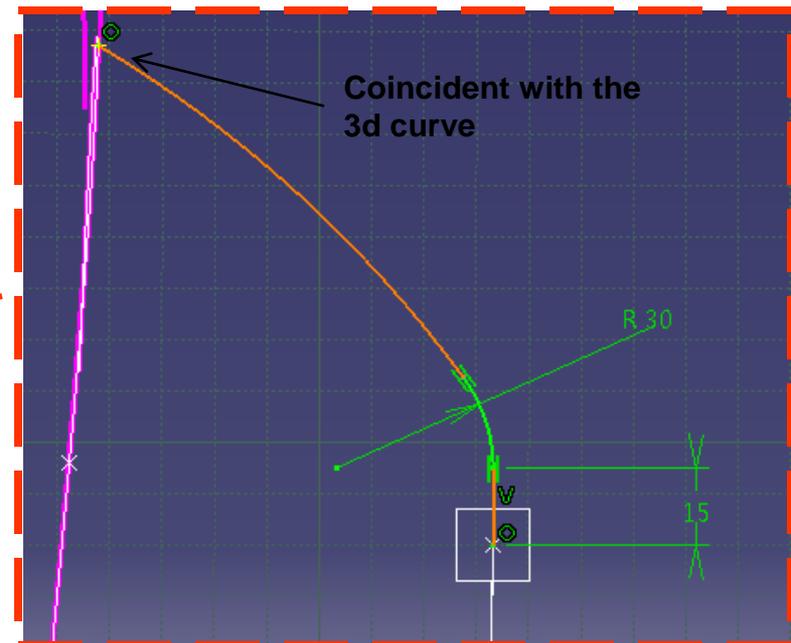
Tutorial 8B

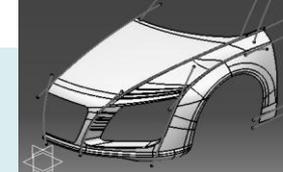
- Create a Extremum Point on top of combined curve
- Create a plane
(Reference: Yz plane, Point: Extremum point)
- Create a point on 3d curve ☆
- Create a point on 3d curve ☆
- Create a Connect curve (trim elements)
- Create a sketch on plane (a line, an arc, then fillet)
- Create another sketch on the offset plane (an arc)
- Create a multi-sections surface
(Coupling Control (optional))



sketch

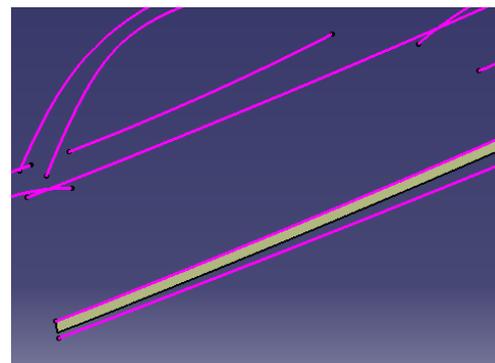
A- 12



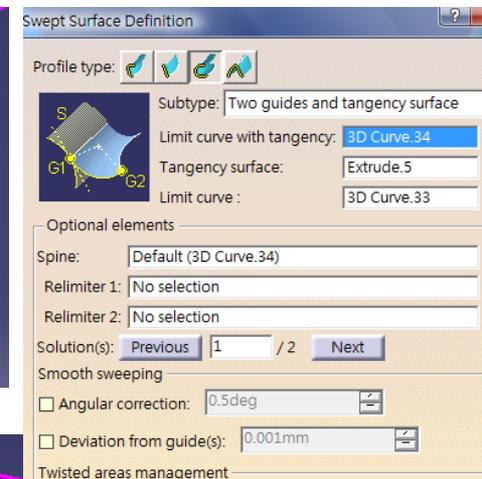
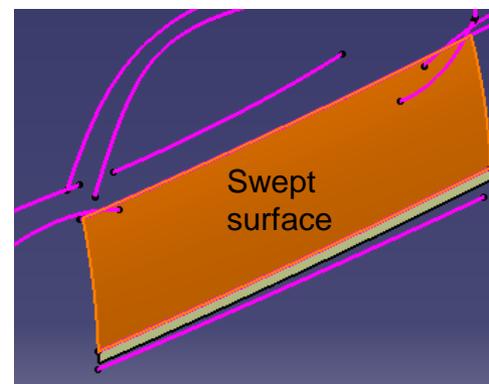


Tutorial 8B

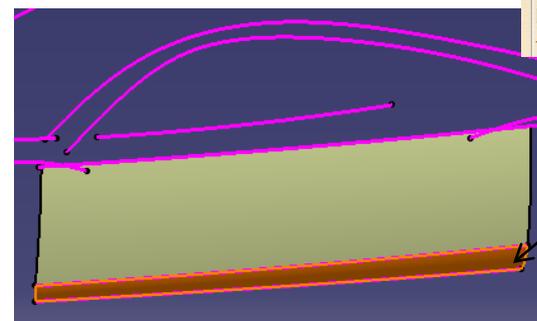
- Create an extruded surface from a 3d curve
(Direction: xy plane; dimension: 50mm)



- Create a Swept surface
 - Profile type: Circle
 - Subtype: 2 guides and tangency surface



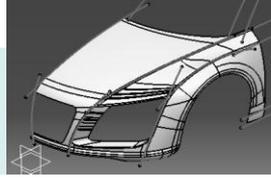
- Create a Blend Surface
 - Define first curve, first support, second curve
 - Select “Curvature Continuity” for first support



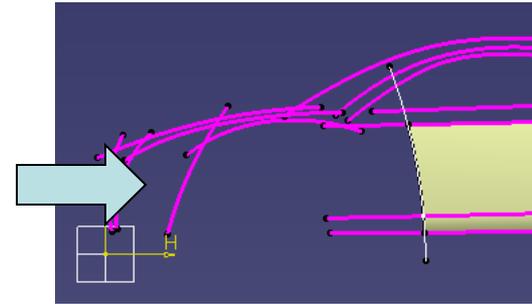
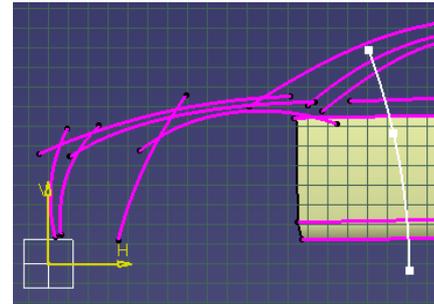
- Join the Swept surface & the Blend Surface

A- 13

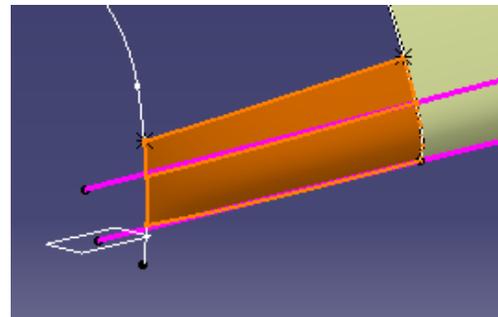
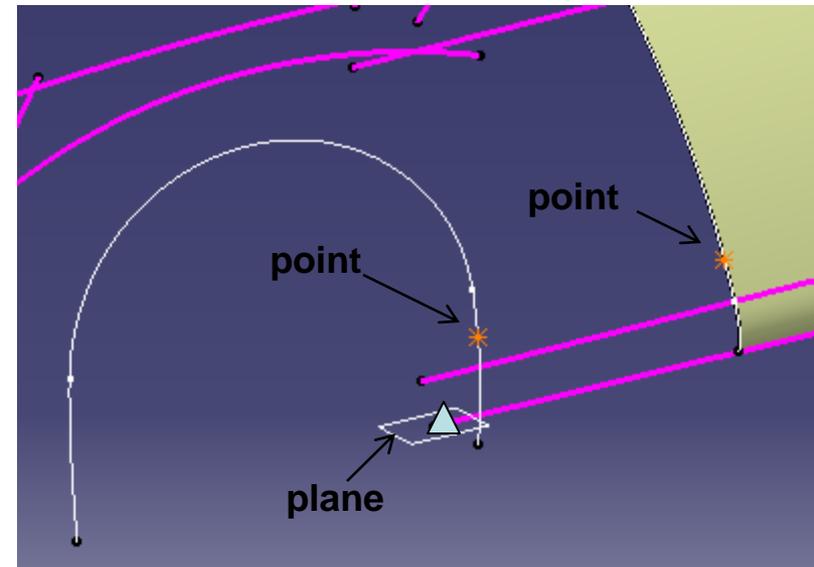
Tutorial 8B



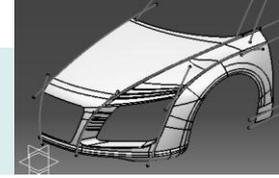
- Create a sketch on XZ plane
- Project the sketch on the Join Surface (Direction: XZ plane)
- Split the surface by the projected curve



- Create an offset plane (Reference: Xy plane, Point: endpoint \triangle)
- Create a point on the combined curve
- Create another point on the projected curve
- Create two split curves
- Create a blend surface

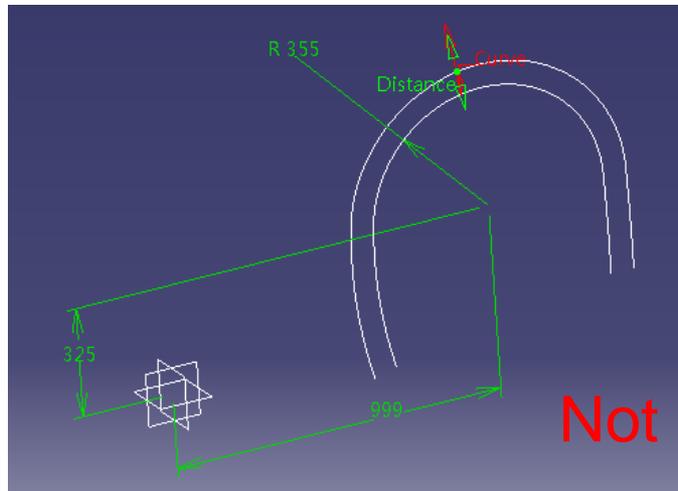
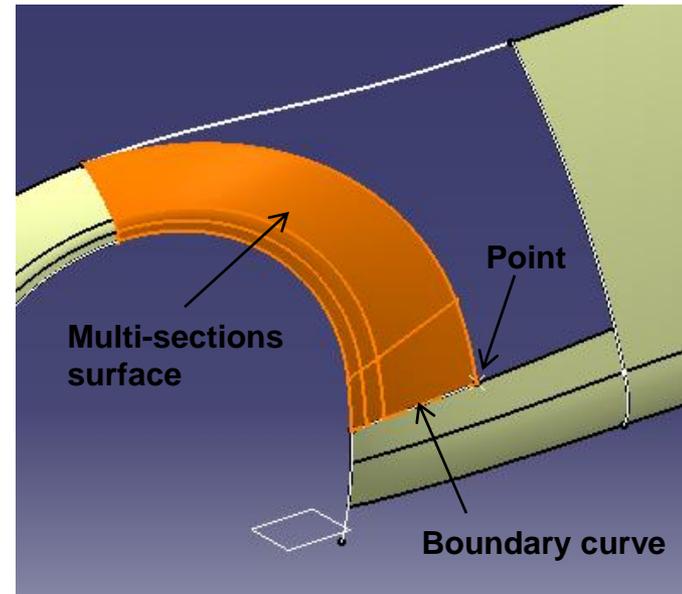
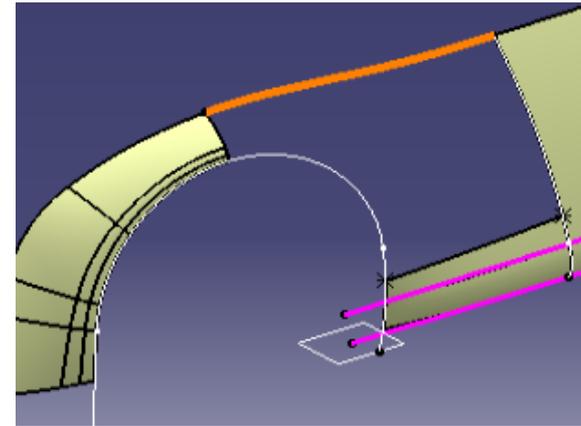


A- 14



Tutorial 8B

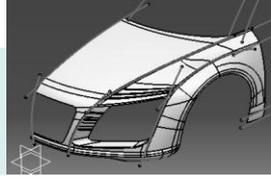
- Create a Connect curve (Curvature Continuous at both ends)
- Create a point on the edge
- Create a boundary curve
- Create a multi-sections surface (2 sections, 2 tangent faces, 1 guide)
- Create a Parallel Curve (offset 70mm, upward)



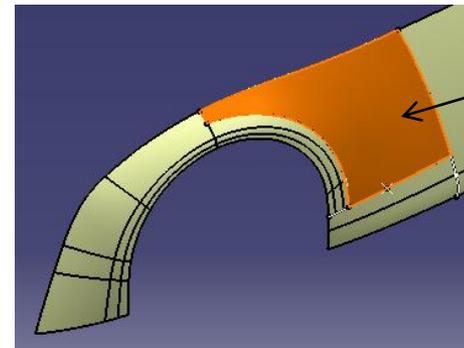
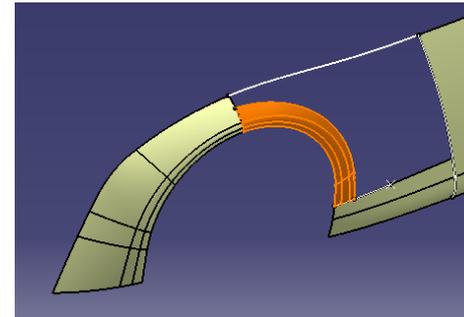
Not For Commercial Use

A- 15

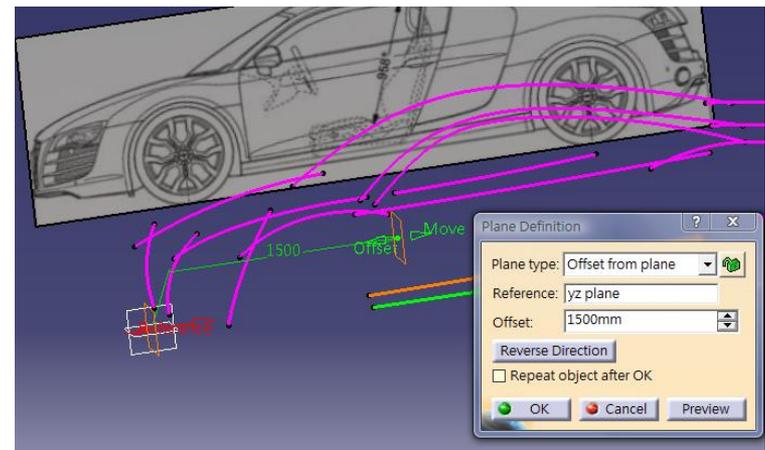
Tutorial 8B



- Project the parallel curve on the multi-sections surface
- Split the surface by the projected curve
- Create a Fill Surface (Curvature continuous)
(Check the resultant surface; if not smooth, modify the corresponding curves/sketches)
- Create an offset plane
 - Reference: Yz plane,
 - offset = 1500mm

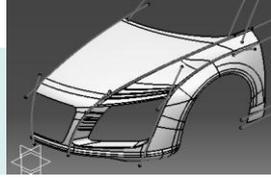


Fill surface

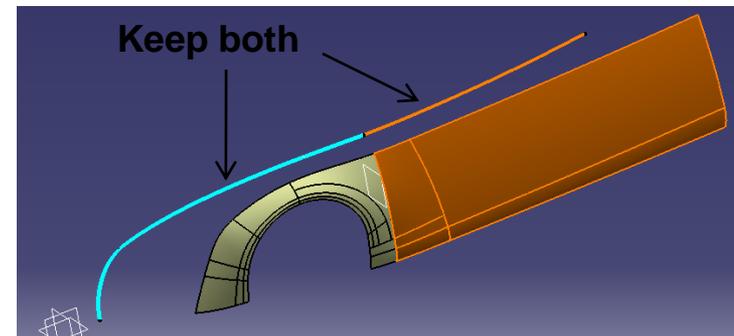
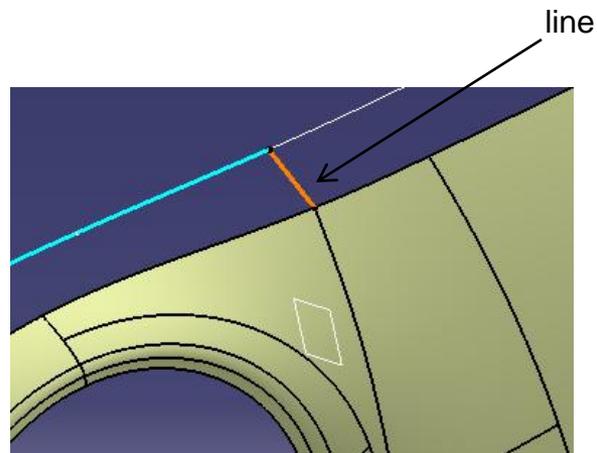
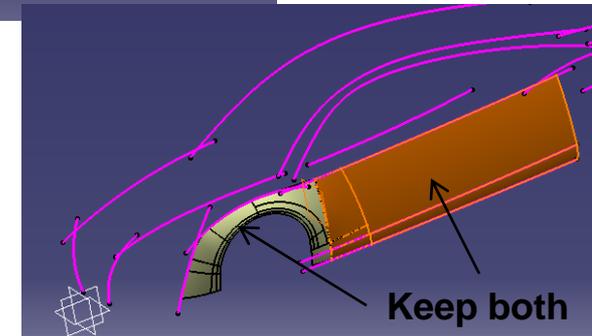
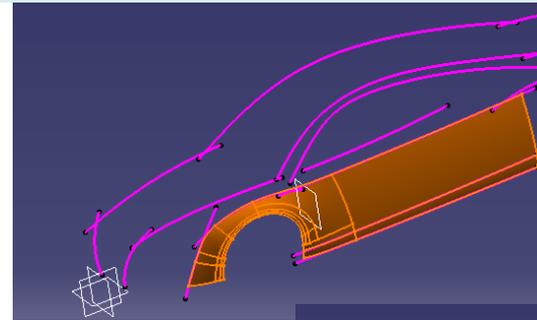


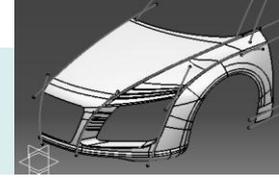
A- 16

Tutorial 8B



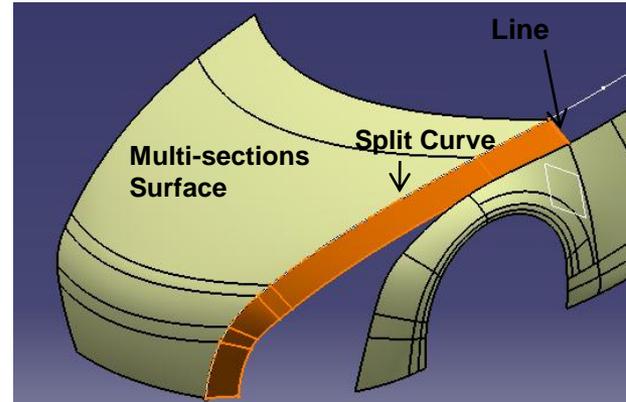
- Join surfaces
- Split the join surface into **Two** (by the offset plane)
(Keep both sides)
- Split the resultant curve into **Two** (by the offset plane)
- Create a line (point – point)



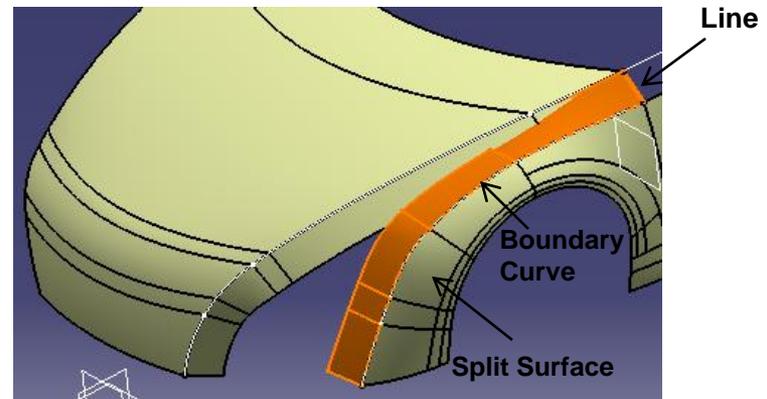


Tutorial 8B

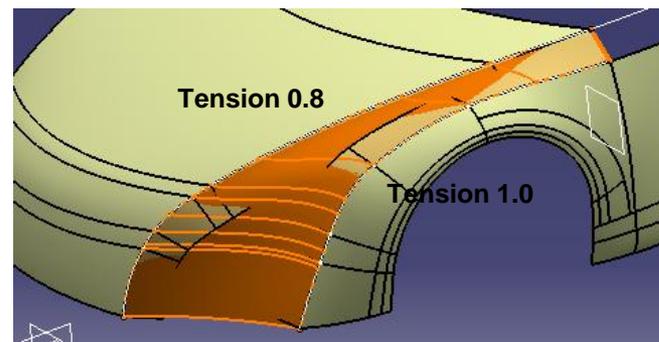
- Create a swept surface
 - Profile : Line
 - Guide Curve: Split Curve
 - Surface: Multi-sections Surface



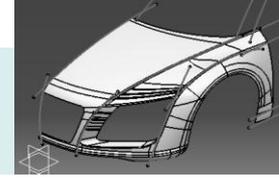
- Create a boundary curve
- Create a swept surface
 - Profile : Line
 - Guide Curve: Boundary Curve
 - Surface: Split Surface



- Create a blend surface
 - tangent continuous on both sides
 - tension 0.8, 1.0



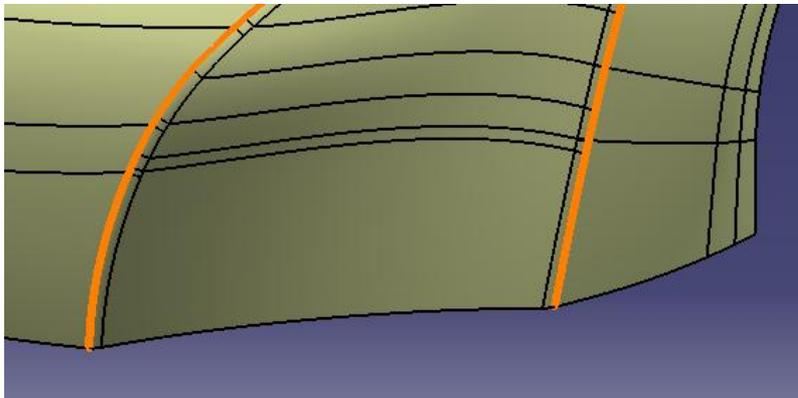
A- 18



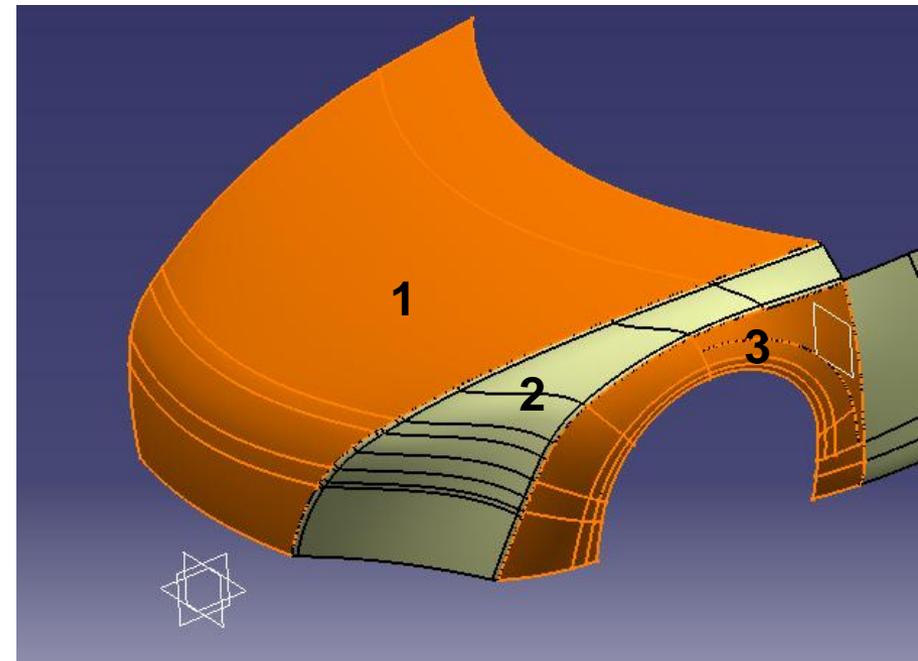
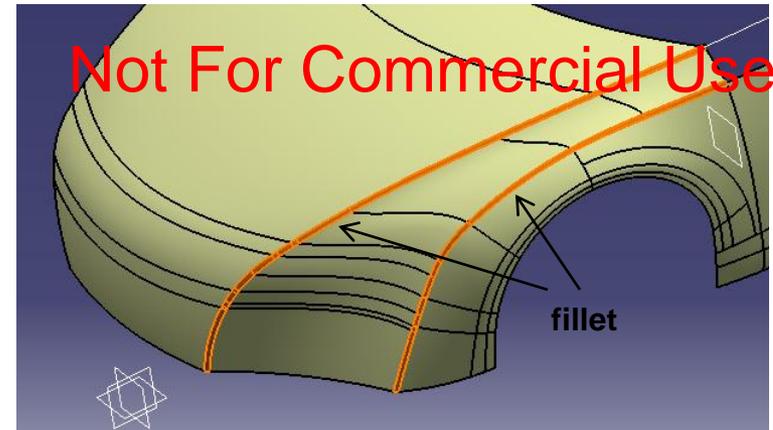
Tutorial 8B

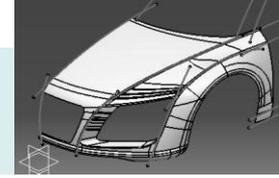
- Create surface-surface fillets (R25mm) twice

- **Extract** two edges (tangency continuity)



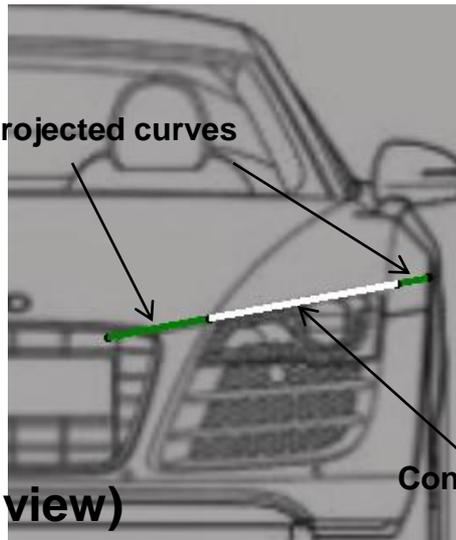
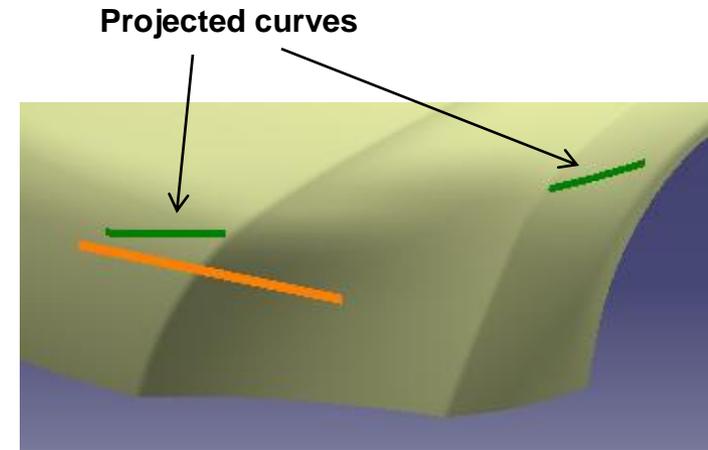
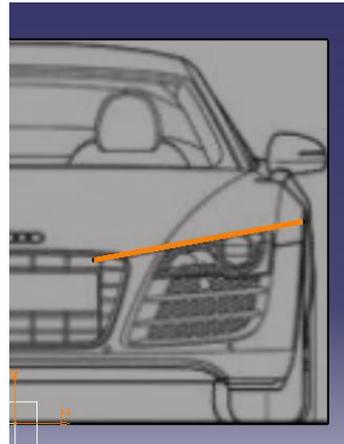
- Split the fillet surface into **THREE**



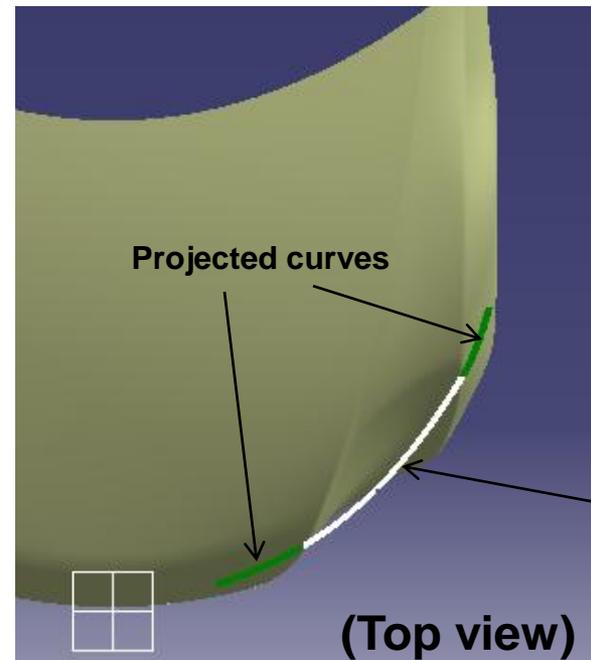


Tutorial 8B

- Create a sketch (on Yz plane)
 - Draw a straight line
- Project the sketch onto the two split surfaces
- Create a connect curve
(Tangency Continuity on both ends)



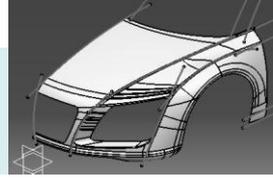
(Front view)



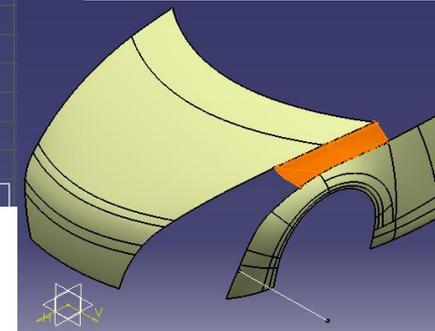
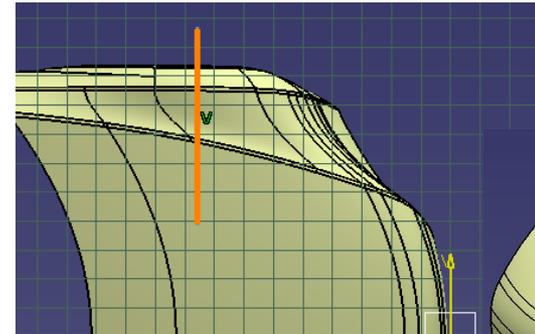
(Top view)

A- 20

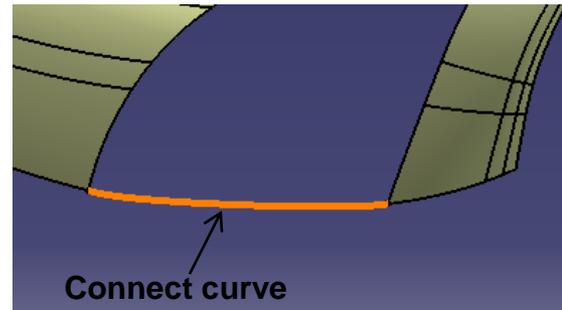
Tutorial 8B



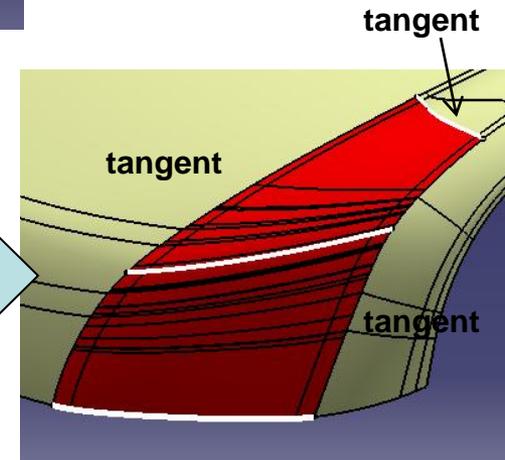
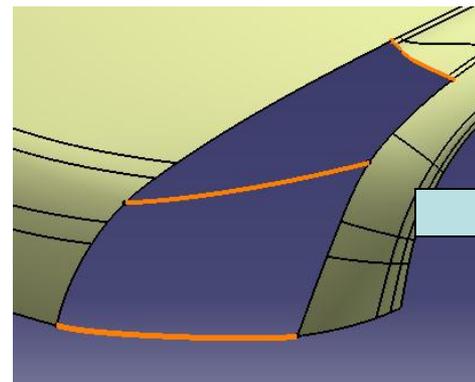
- Create a sketch (on Xy plane)
 - Draw a straight line
- Project the sketch onto the middle split surface
- Split the surface by the projected curve

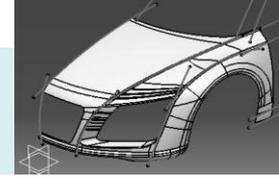


- Create a connect curve
 - Curvature Continuity at both ends
 - Tension 0.5 at both ends



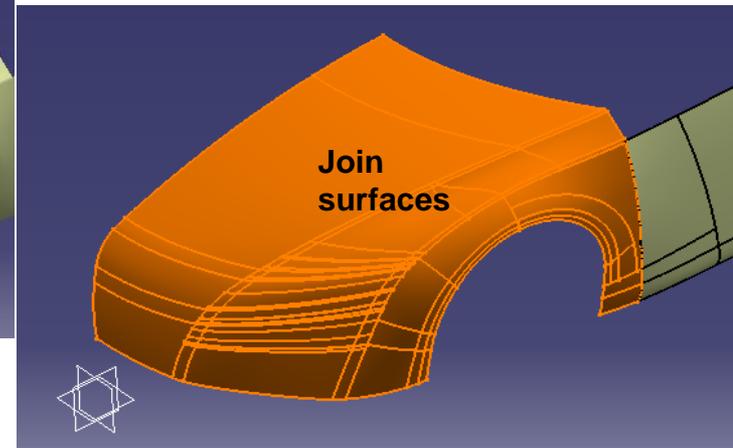
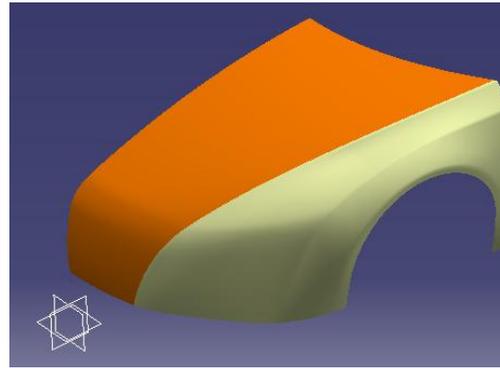
- Create a multi-sections surfaces
 - 3 sections & 2 guides
 - Tangent to surfaces



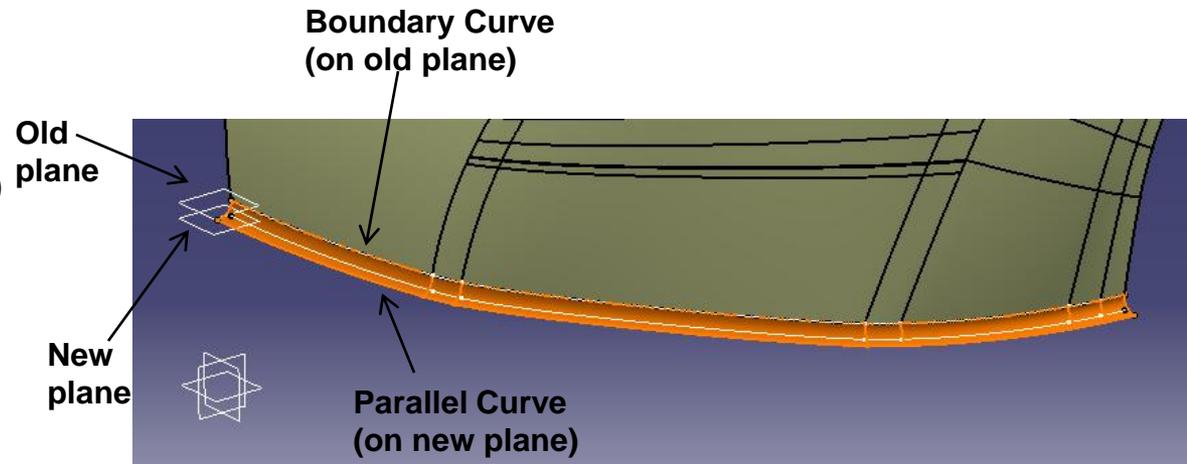


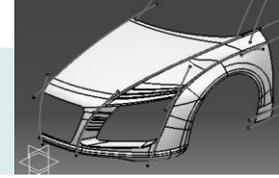
Tutorial 8B

- Split surface by XZ plane
- Join surfaces



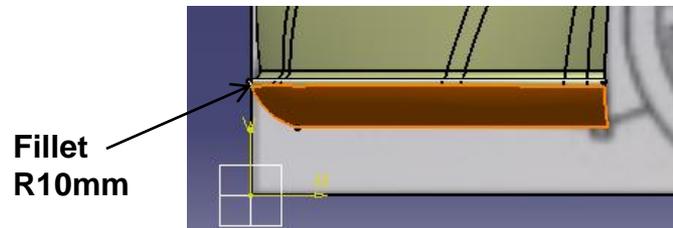
- Create a new plane (offset 20mm from the existing plane)
- Create a boundary curve
- Project it onto the offset plane
- Parallel curve by 20mm (outward)
- Create a blend surface



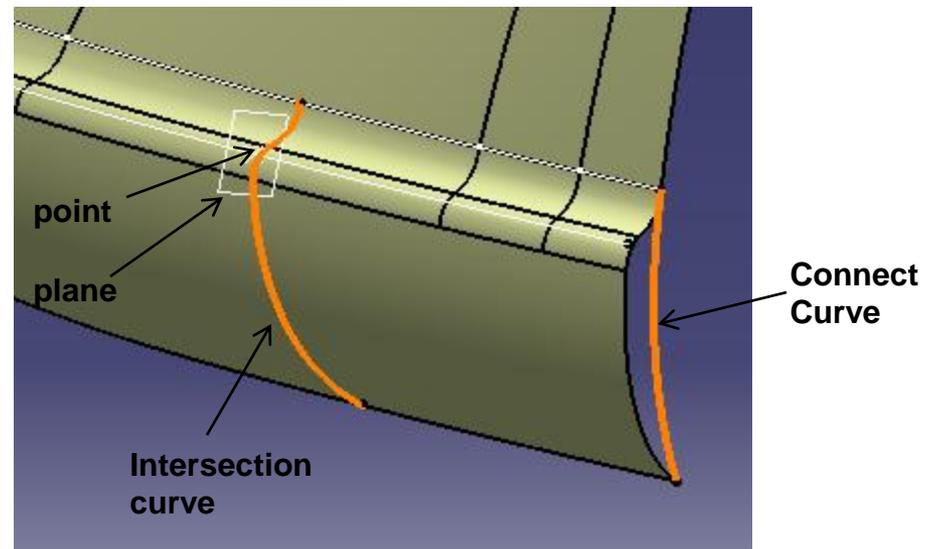


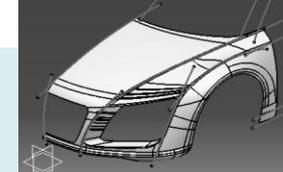
Tutorial 8B

- Create a sketch on XZ plane
 - Draw an arc
- Create a Swept surface
- Create a shape Fillet (R10mm)



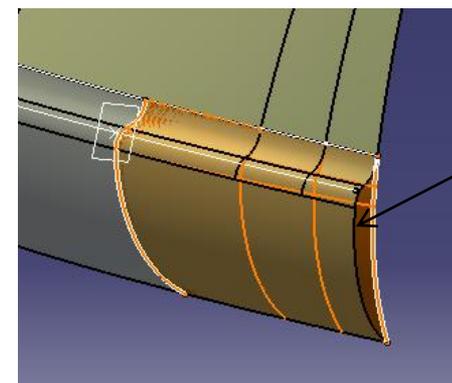
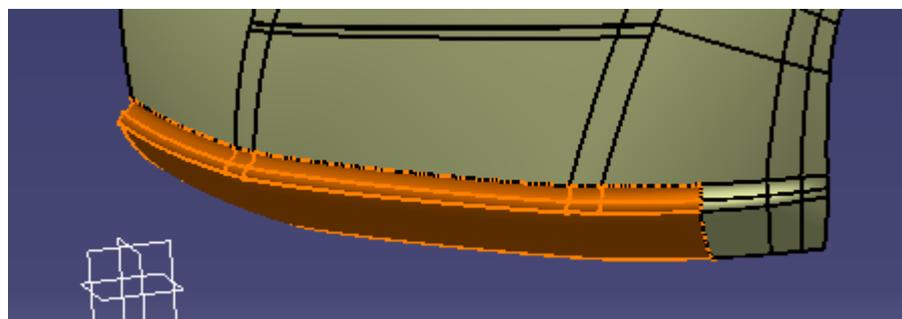
- Create a point on the boundary
- Create a plane at the point
- Create an intersection curve
- Create a connect curve



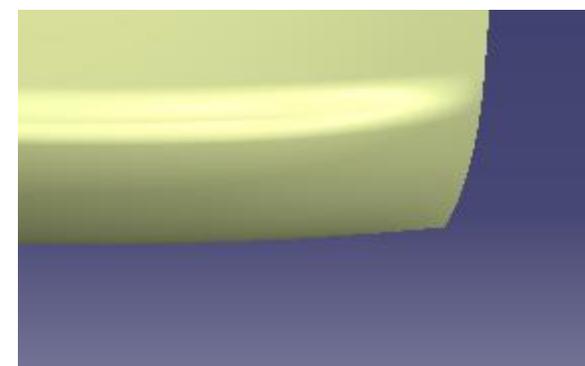


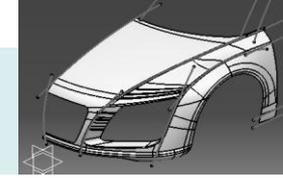
Tutorial 8B

- Create a multi-sections surface
 - 2 Sections & 2 Guides
 - Tangent to surfaces
- Split the Fillet surface by the intersection curve



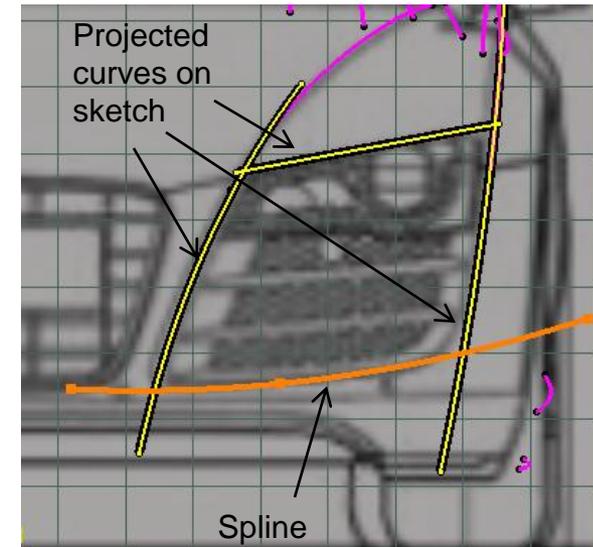
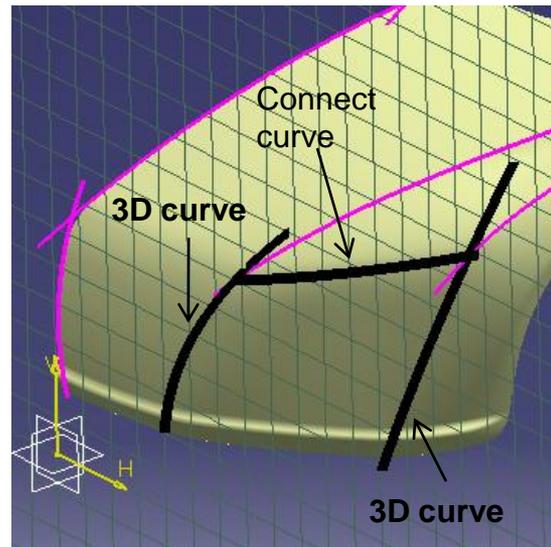
Multi-sections surface



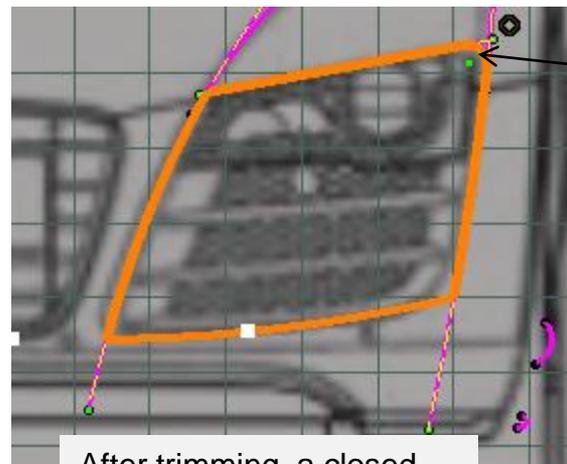


Tutorial 8B

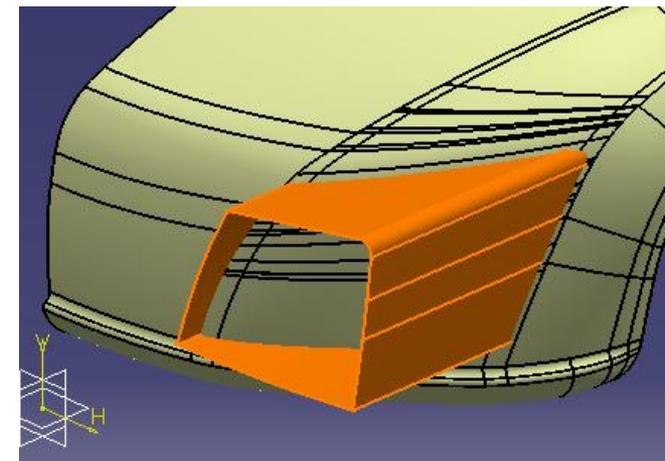
- Create a sketch on Yz plane
 - Create 3 projected curves,
 - Create a spline curve
 - Create a fillet R25mm
 - Trim curves to form a closed profile



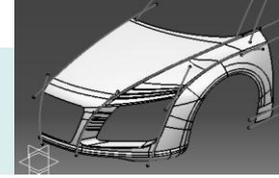
- Create an extruded surface (750mm)



After trimming, a closed profile is formed

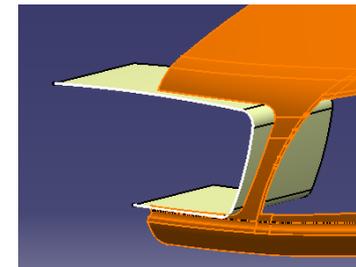
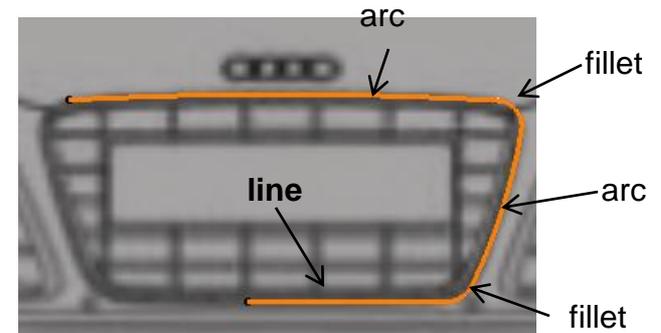
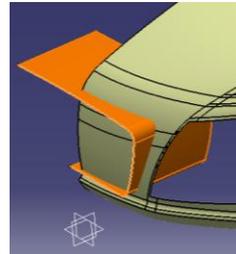


A- 25

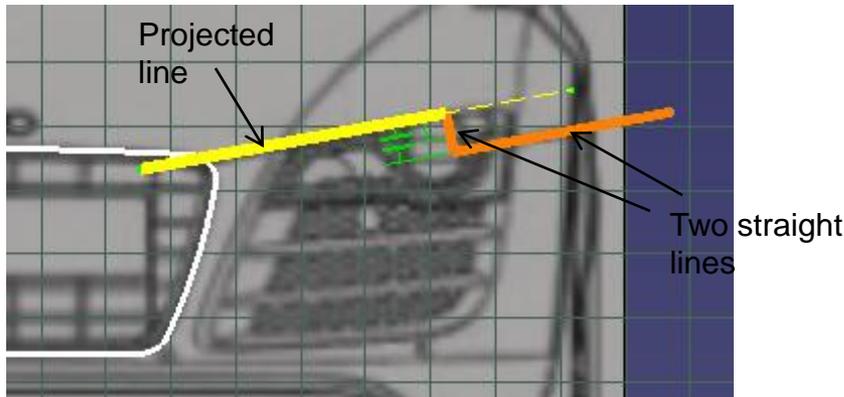


Tutorial 8B

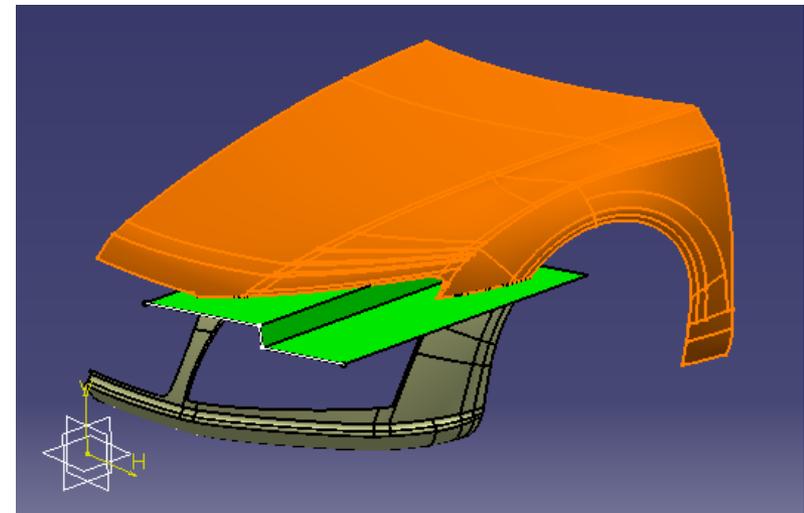
- Insert a new geometrical set (name it as “parting_surface”)
- Create a sketch on YZ plane
- Create an extruded surface (350mm)
- Split surface (by the extruded surface)

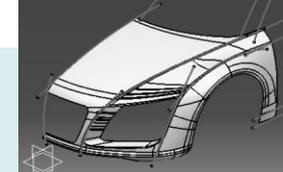


- Create a sketch on YZ plane



- Create an extruded surface (860mm)
- Split the surface **into Two (keep both sides)**

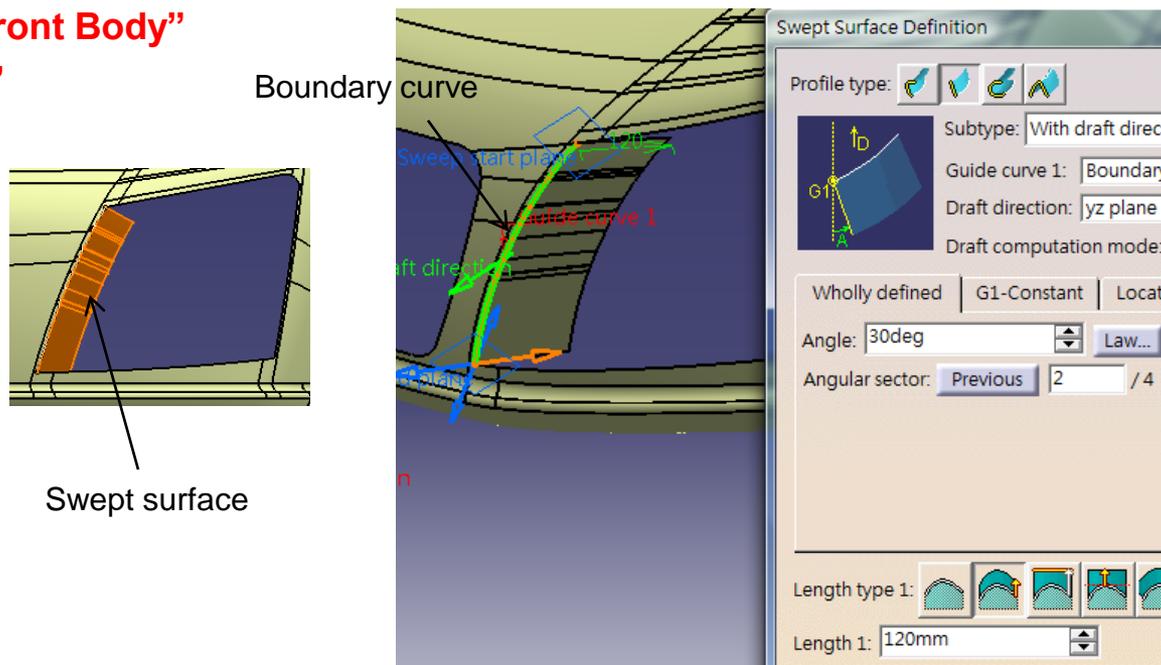




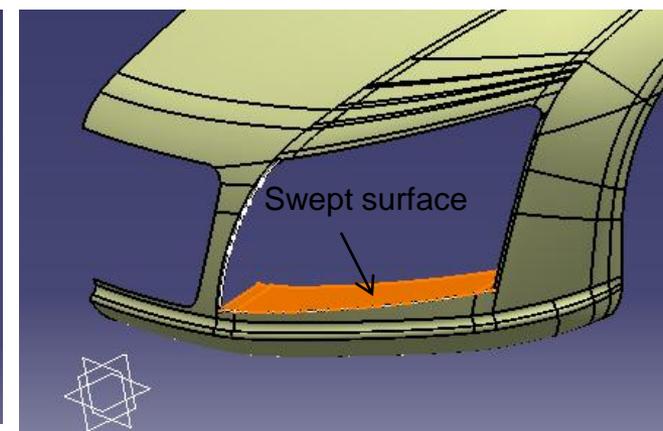
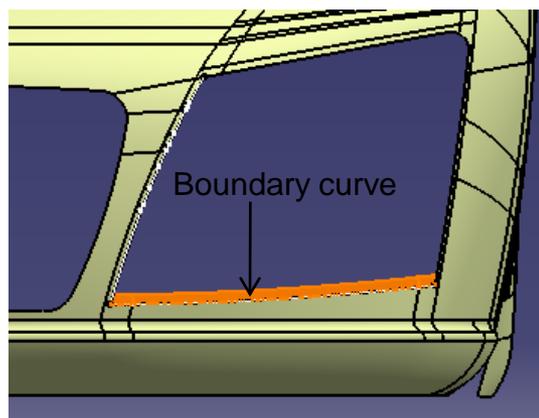
Tutorial 8B

- **Right-click Geometrical set “Front Body”**
- **Select “Define in Work Object”**

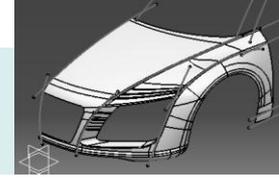
- Create a boundary curve
- Create a swept surface
 - Profile Type = Linear
 - Subtype = with draft direction
 - Guide curve = Boundary
 - Draft direction = yz plane
 - Angle = 30 deg
 - Length = 120mm



- Create a boundary curve
- Create a swept surface
 - Profile Type = Linear
 - Subtype = with draft direction
 - Guide curve = Boundary
 - Draft direction = yz plane
 - Angle = 8 deg
 - Length = 100mm

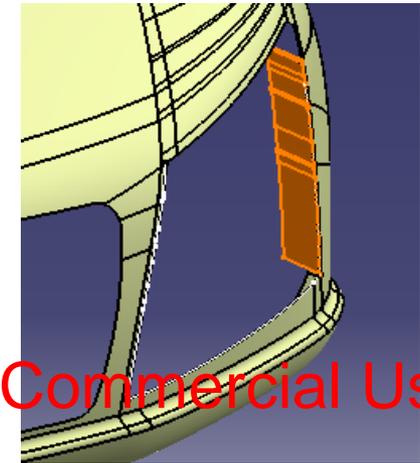
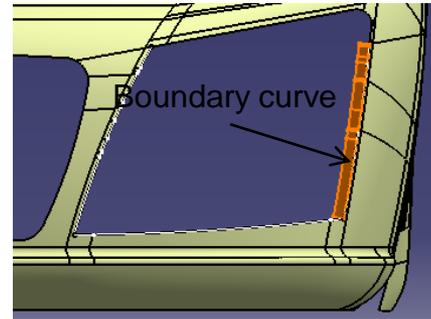


A- 27



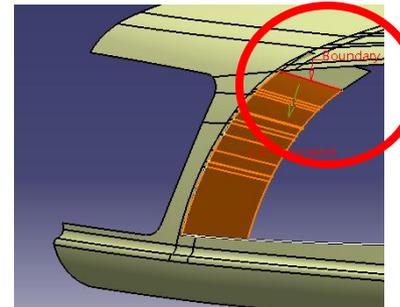
Tutorial 8B

- Create a boundary curve
- Create a swept surface
 - Profile Type = Linear
 - Subtype = with draft direction
 - Guide curve = Boundary
 - Draft direction = yz plane
 - Angle = 10 deg
 - Length = 100mm

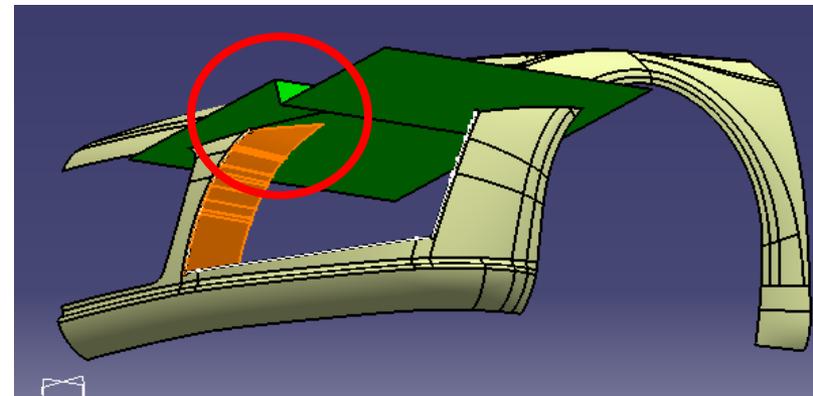


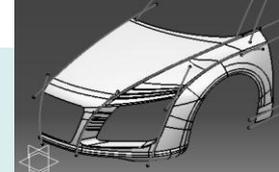
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- Extrapolate the surface by 100mm (assemble result)



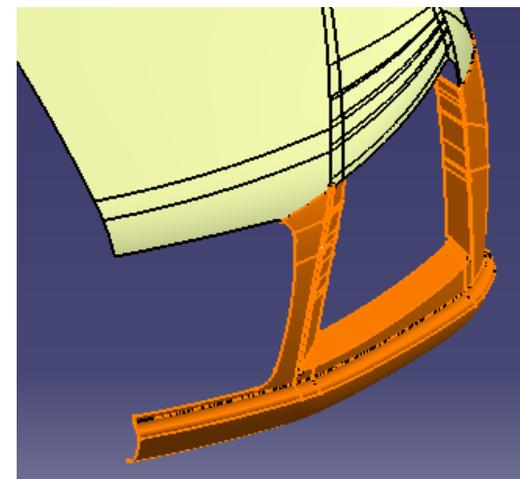
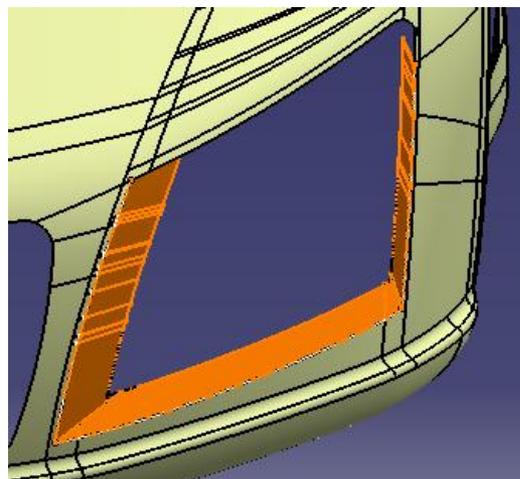
- Split the extended surface by the parting surface



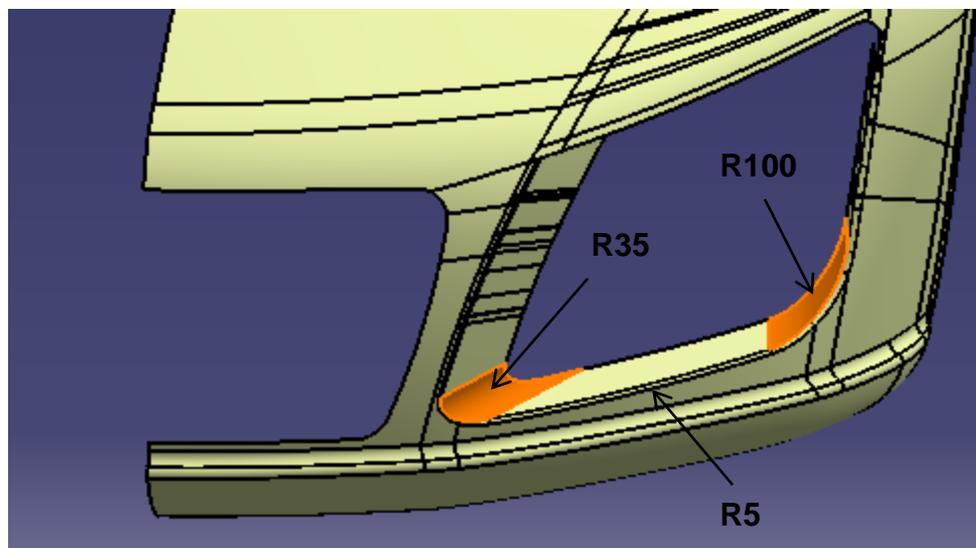


Tutorial 8B

- Mutual Trim the 3 swept surfaces
- Join surfaces

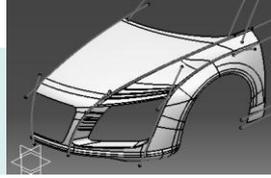


- Edge fillet 35mm
- Edge fillet 100mm
- Edge fillet 5mm

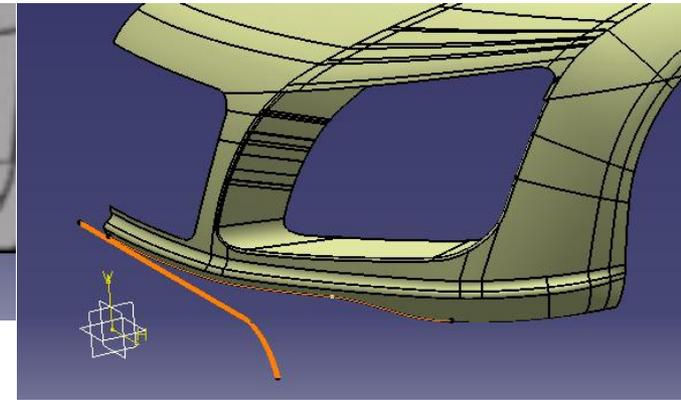
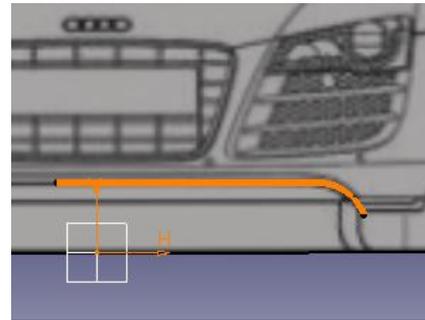


A- 29

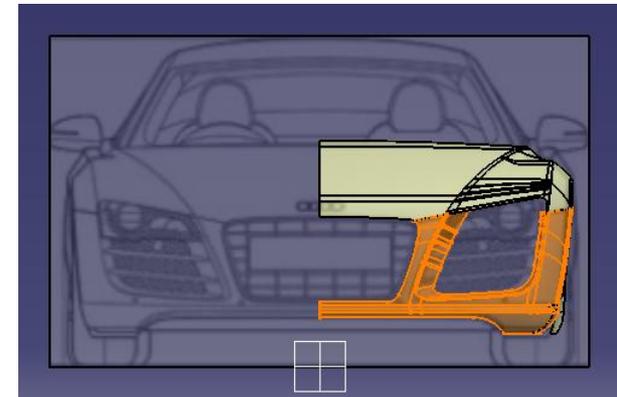
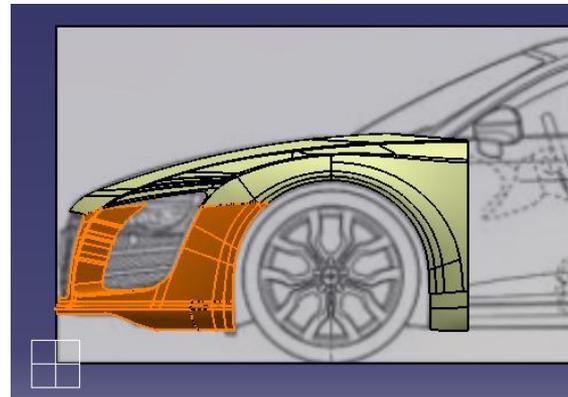
Tutorial 8B

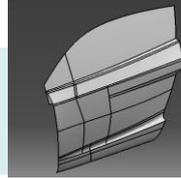


- Create a sketch on YZ plane
- Project the sketch onto surface
- Split surface by the projected sketch



- Check the finished model with the reference pictures
- Modify the model if needed
- Save file “R8_master_a.catpart”



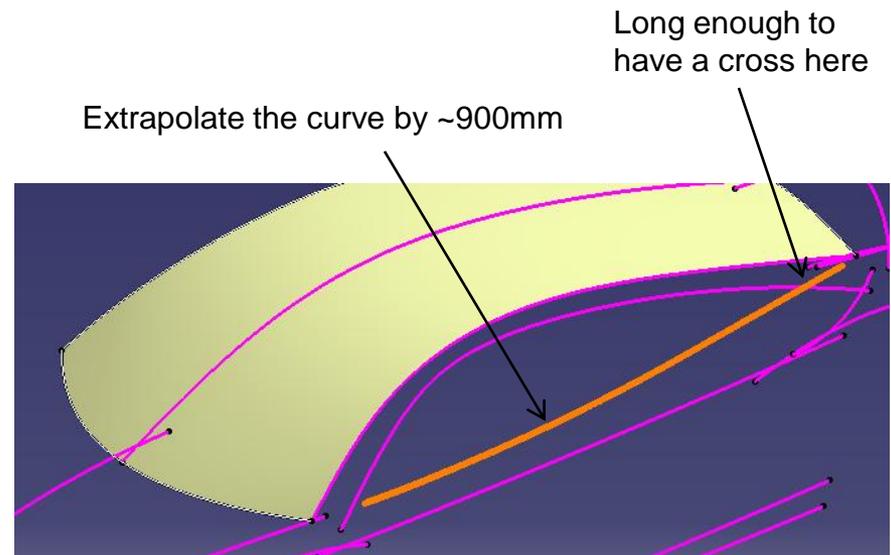
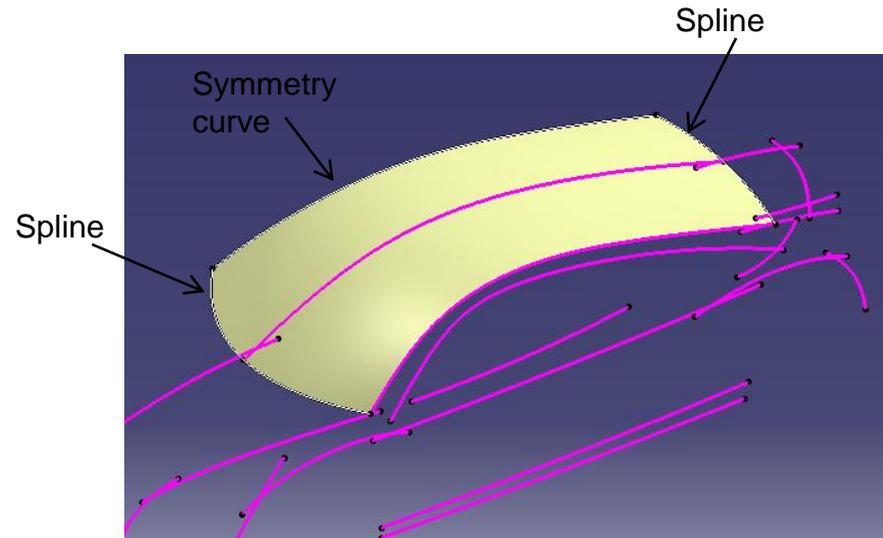


Middle Body (master)

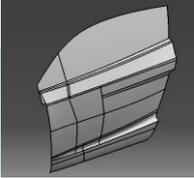
Tutorial 8C

- **Insert a New geometrical set “middle_body”**
- Create a symmetry 3d curve
- Create two 3d spline curves
- Create a multi-sections surface (3 sections, 2 guides)

- Extrapolate a curve (900mm, curvature, assemble result)



A- 31

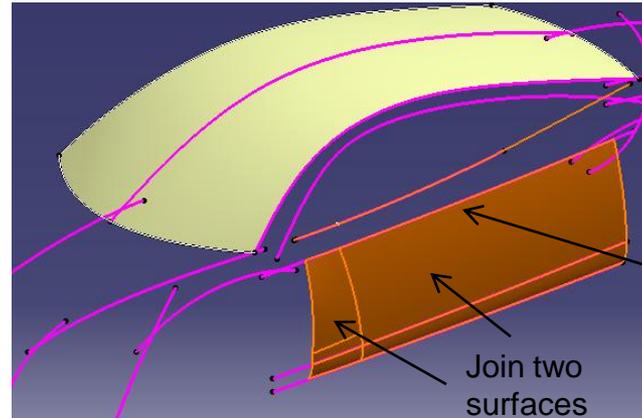
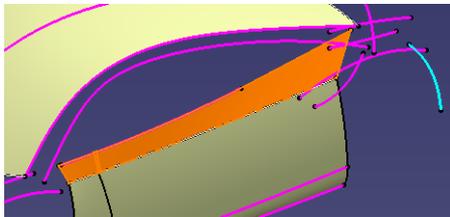


Middle Body

(master)

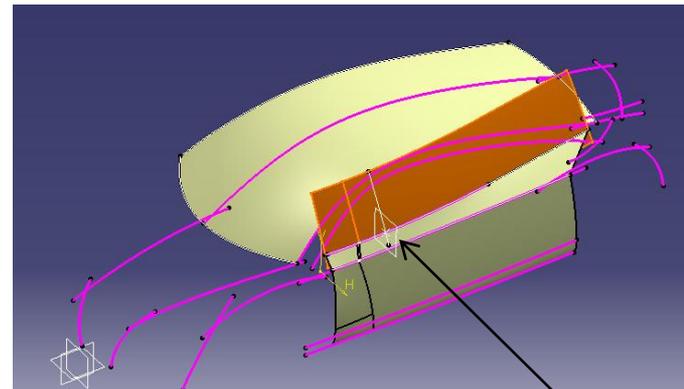
Tutorial 8C

- Join two surfaces
- Hide the 3d curve
- Create a boundary curve on the edge
- Create a blend surface (2 curves, no supports)

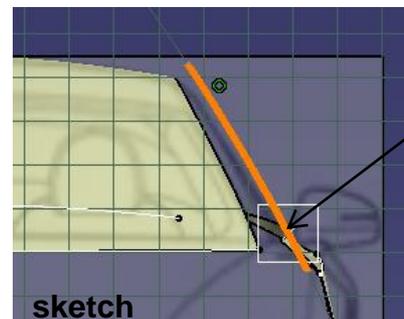


3d Curve
(build a boundary curve on this edge)

- Create a extremum point (direction: xz plane)
- Create a plane at the point
 - Parallel through point
 - Reference: YZ plane
 - Point: Extremum point



- Create a sketch on the plane (Draw an arc)
- Create a swept surface (profile, guided curve)

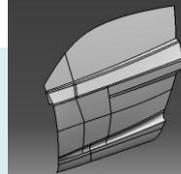


Extremum point

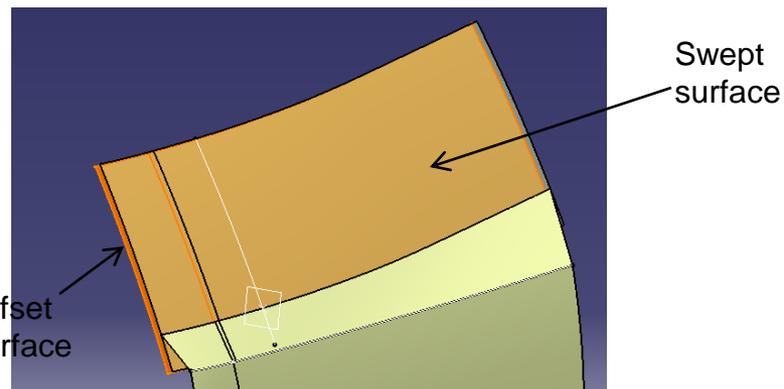
A- 32

Middle Body (master)

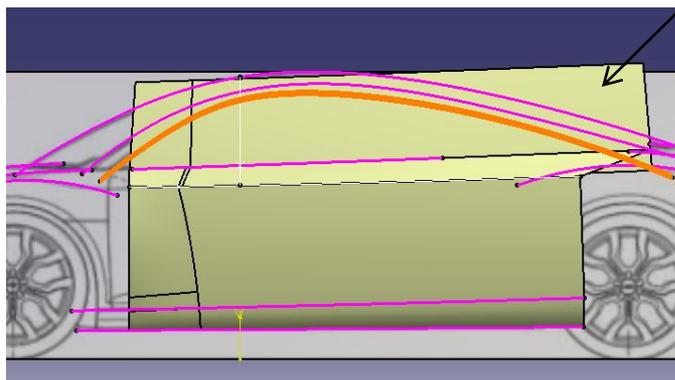
Tutorial 8C



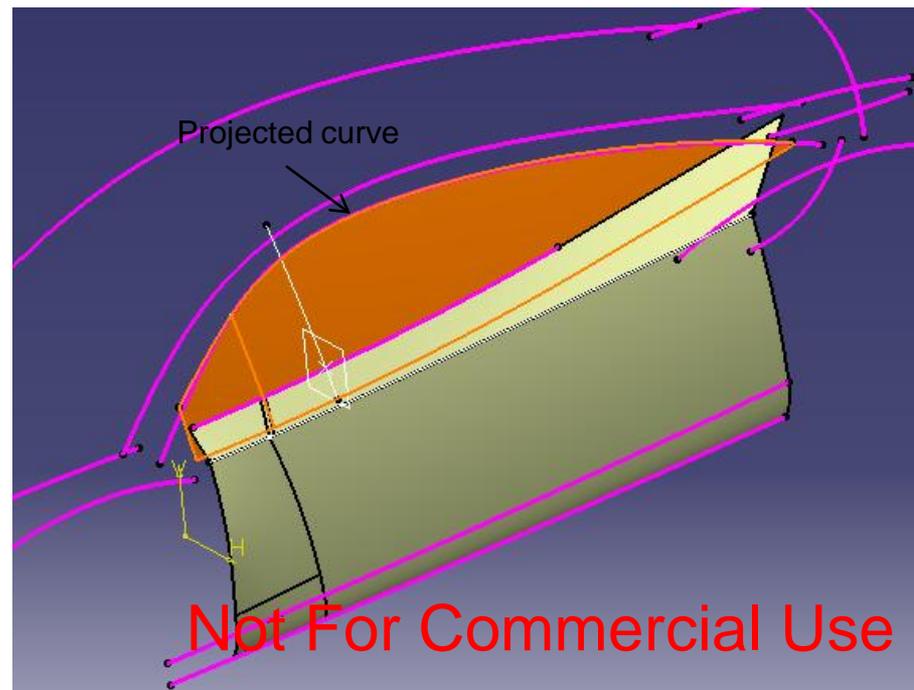
- Create offset surface (15mm, inward)



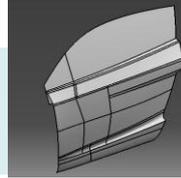
- Project 3d curve on the offset surface (Direction: xz direction)



- Split surface by the projected curve

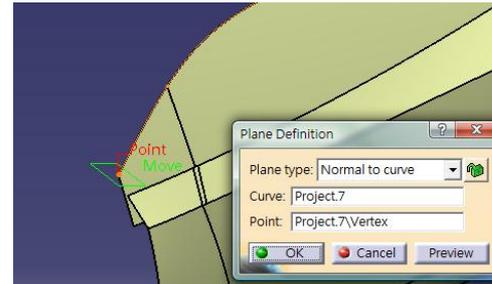


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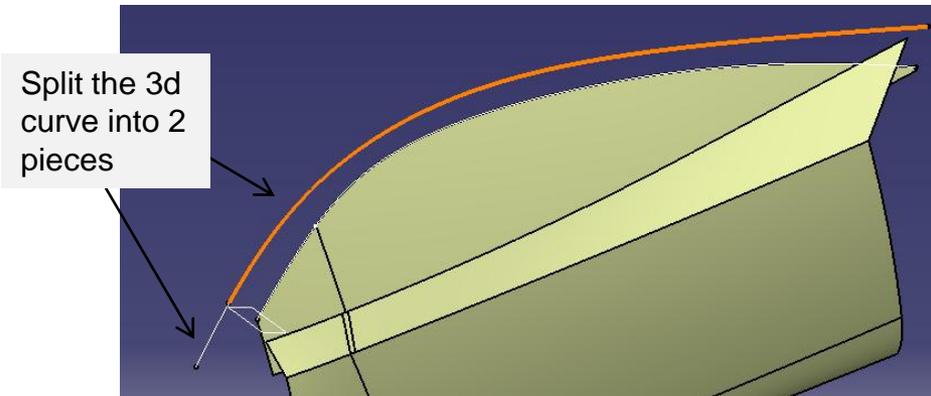


Tutorial 8C

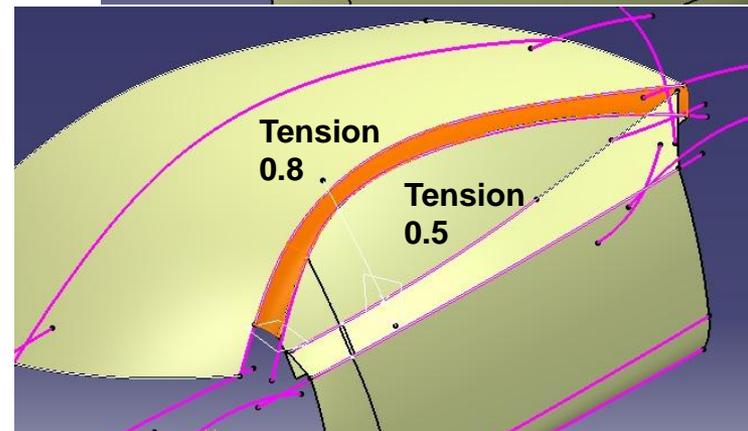
- Create a plane at the endpoint of the projected curve. (Normal to curve)



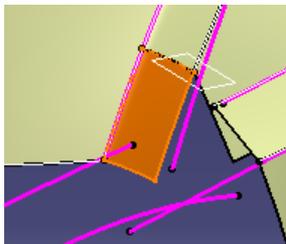
- Split the 3d curve by the plane **(into 2)**



- Create a blend surface (2 curves, 2 supports, tangency continuity, tension 0.8, 0.5)

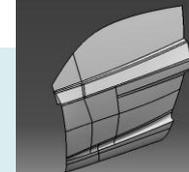


- Create a swept surface

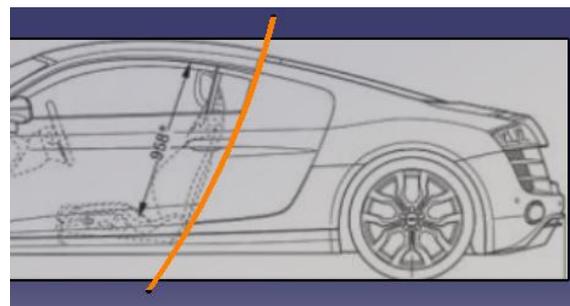


A- 34

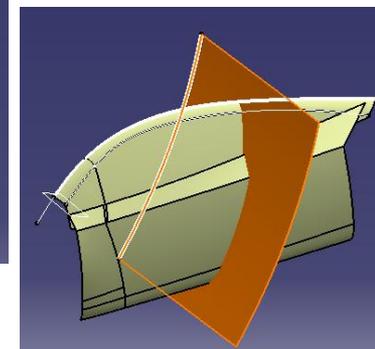
Tutorial 8C



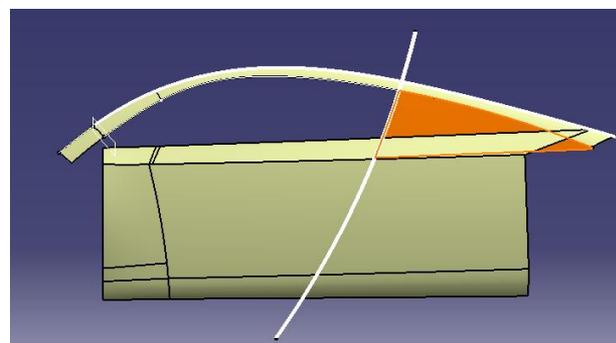
- **Right-Click Geometrical set “parting_surface”, select “Define in work object”**



- Create a sketch on XZ plane (draw a spline)
- Create an extruded surface (1500mm)

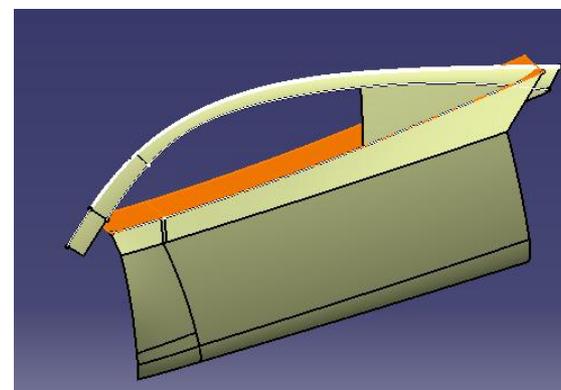


- **Right-Click Geometrical set “middle_body”, select “Define in work object”**

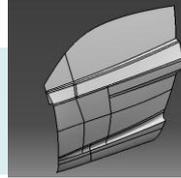


- Split the offset swept surface by the extruded surface

- Create an Extruded Surface (Direction: Xz plane, L=200mm)

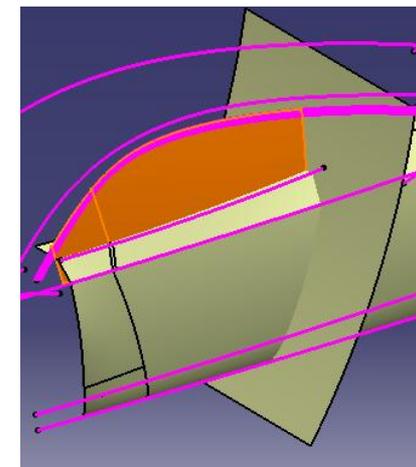
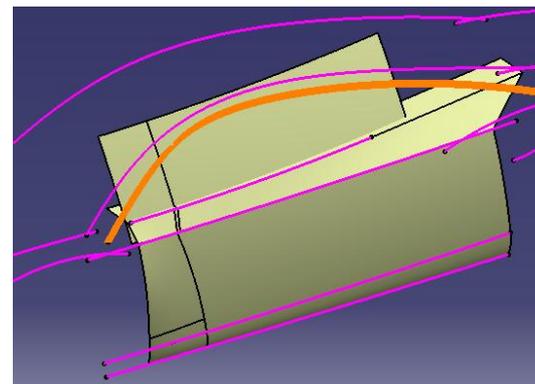
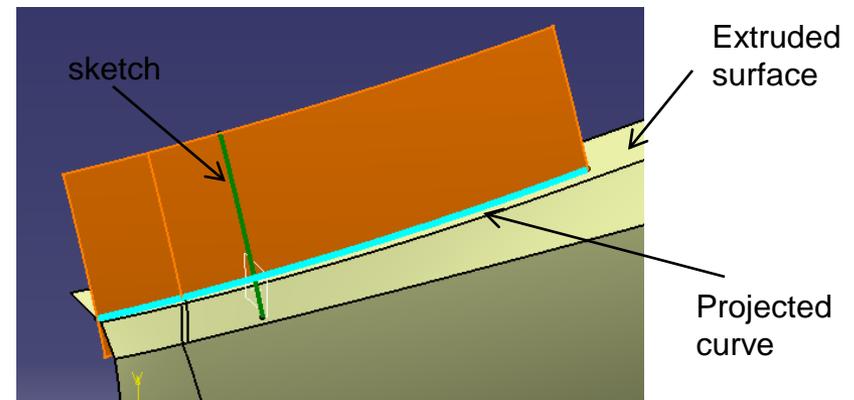
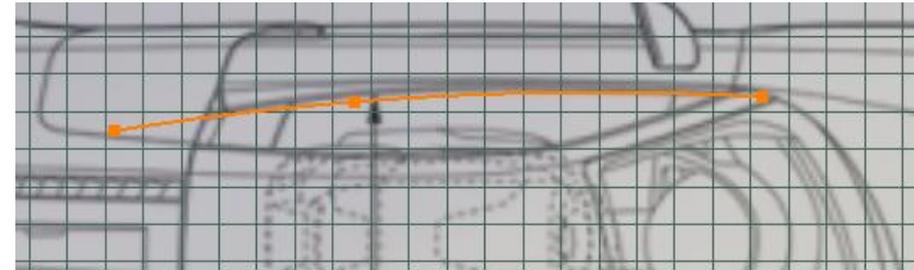


A- 35



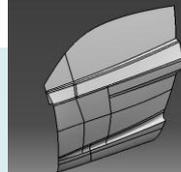
Tutorial 8C

- Create a sketch on XY plane (Draw a spline)
- Project it on the extruded surface
- Create a swept surface
(Profile: Projected curve, Guide: Sketch)
- Project 3d onto this swept surface
- Split surface by the projected curve
- Split surface by the extruded surface in the geometrical set “parting_surface”

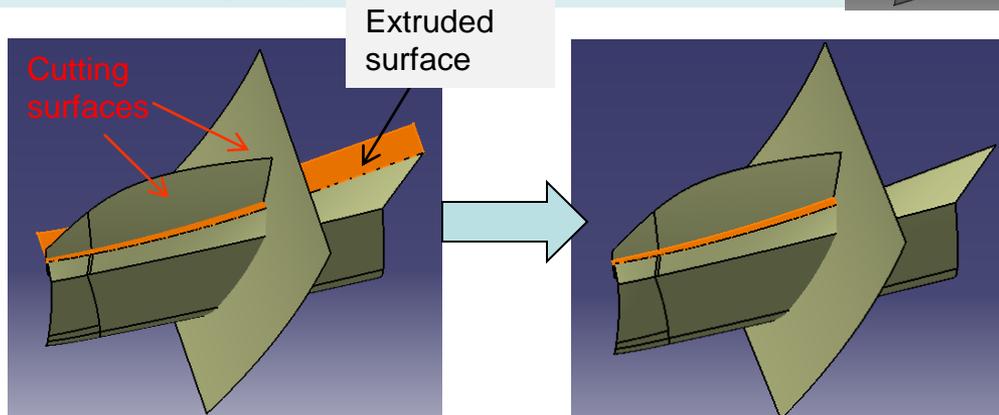


A- 36

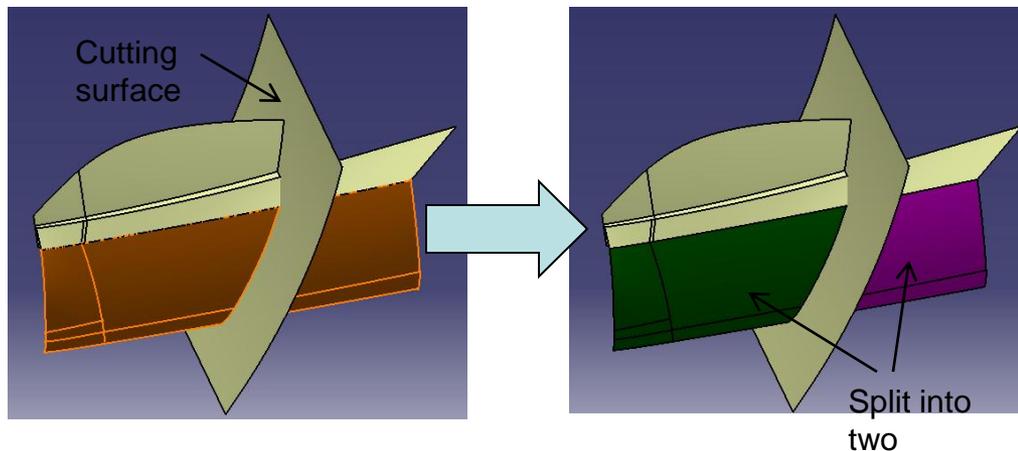
Tutorial 8C



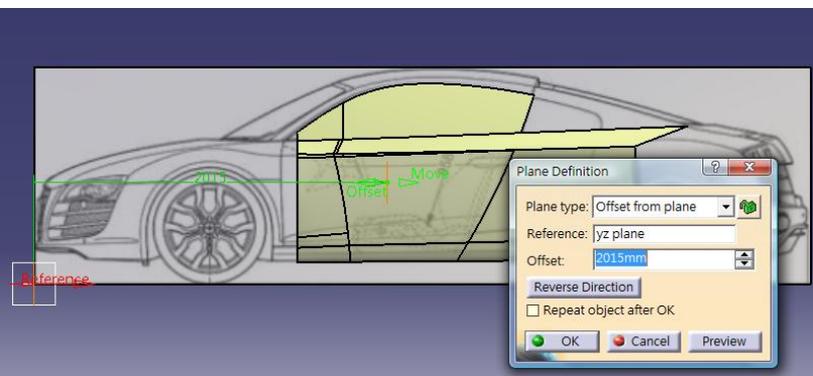
- Split the extruded surface (by 2 cutting surfaces)



- Split joint surface **into 2** (by the parting surface)

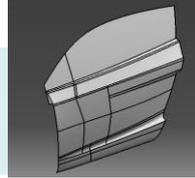


- Create an offset plane
(Reference: Yz plane, offset 2015mm)

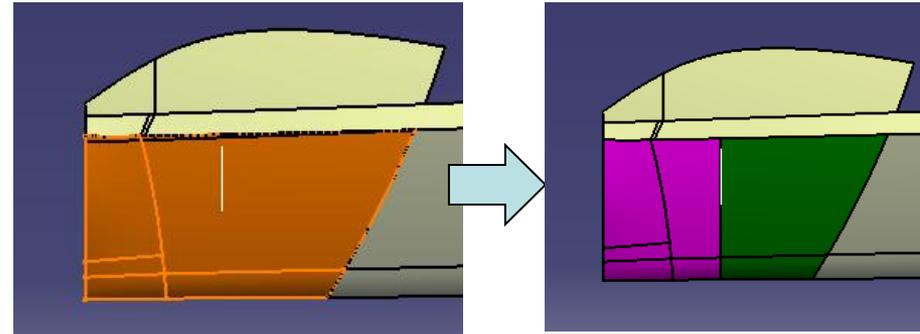


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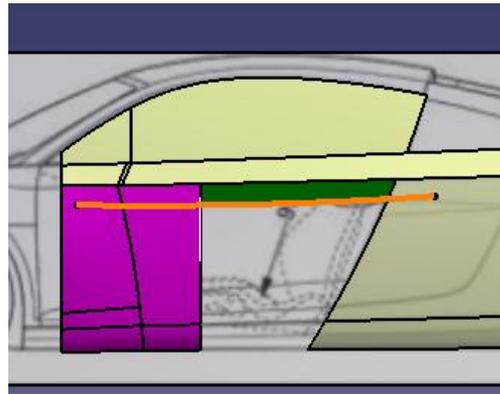
Tutorial 8C



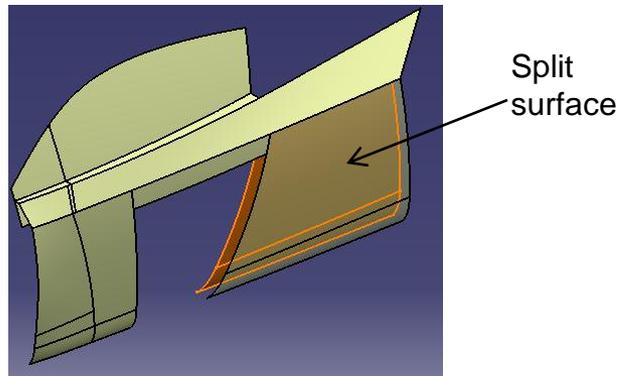
- Split surface into 2 by the offset plane



- Create a sketch on Xz plane (Draw a spline)
- Project sketch on the split surface
- Split surface by projected sketch

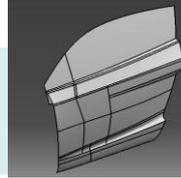


- Create a Translate Surface
 - Element: Split surface
 - Direction: XZ plane
 - Distance: -60mm

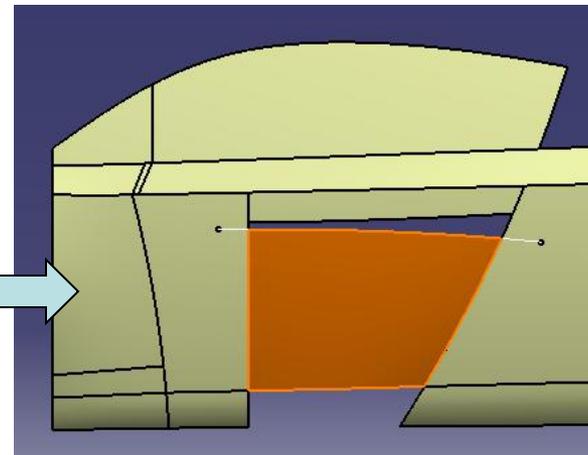
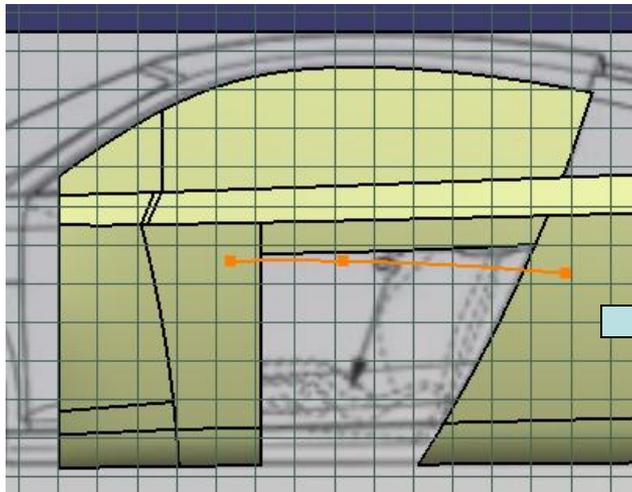
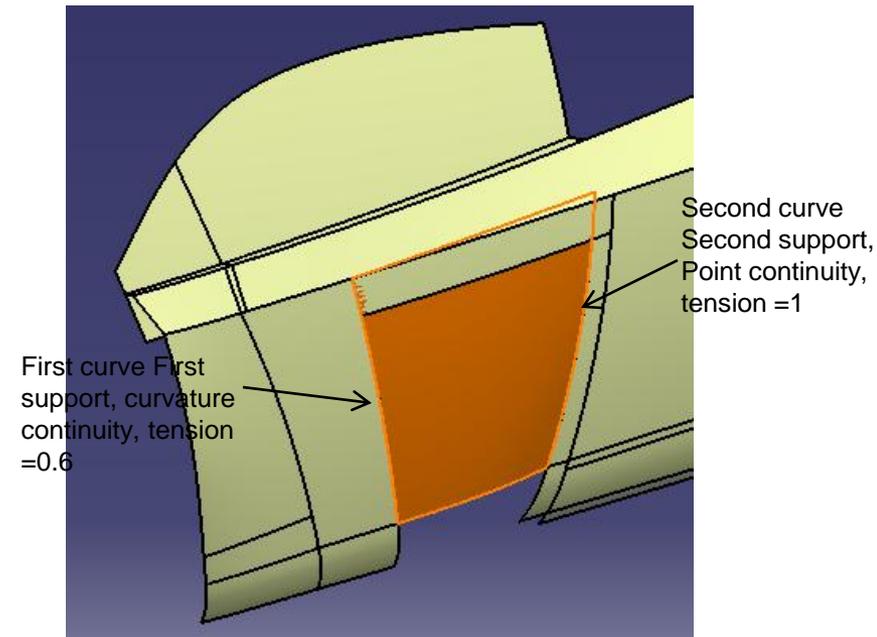


A- 38

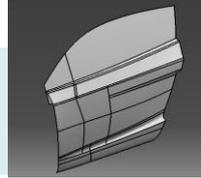
Tutorial 8C



- Create a blend surface
 - First curve First support, curvature continuity, tension =0.6
 - Second curve Second support, point continuity, tension =1
- Create a sketch on Xz plane (Draw a spline)
- Project sketch onto the blend surface
- Split the surface by projected sketch

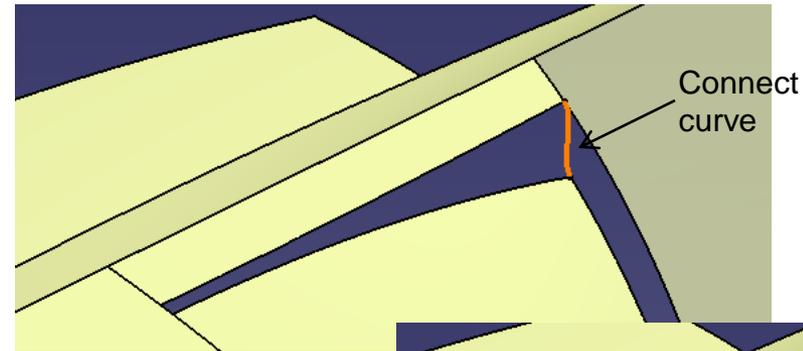


A- 39

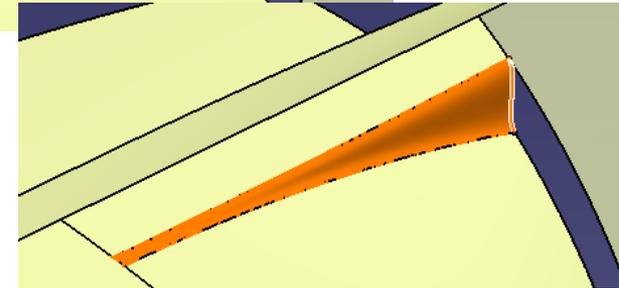


Tutorial 8C

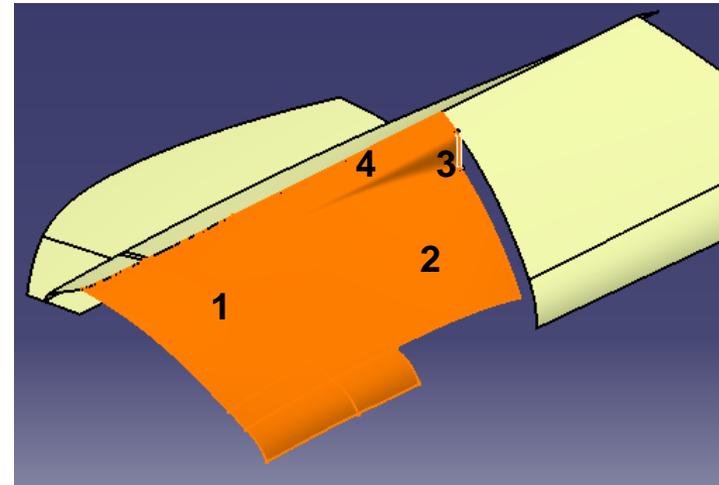
- Create a connect curve (tangent, tangent)



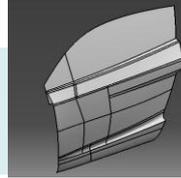
- Create a fill surface
 - 4 curves, 3 supports
 - Tangent Continuity



- Join surfaces (4 surfaces)

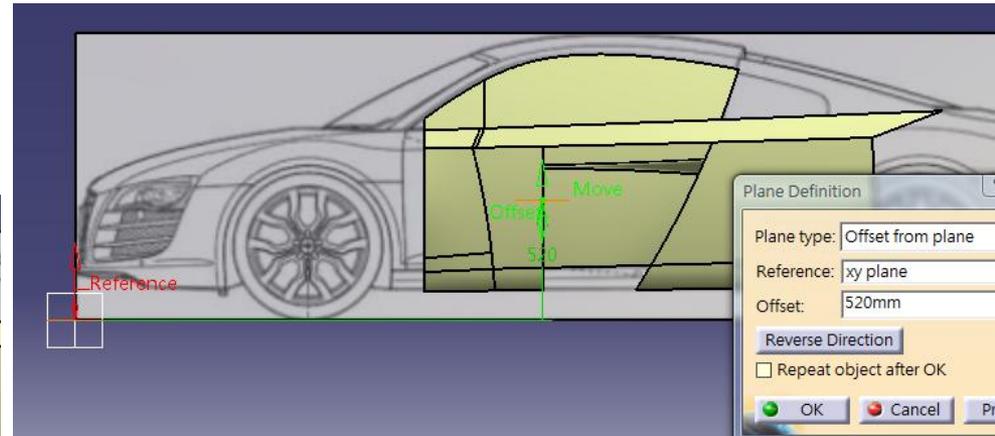
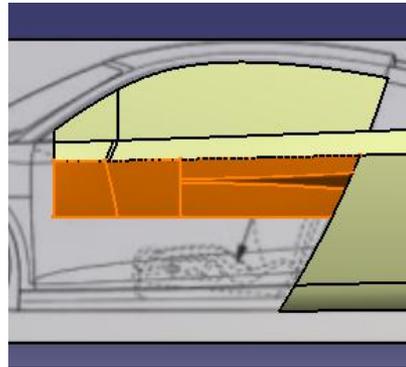


A- 40



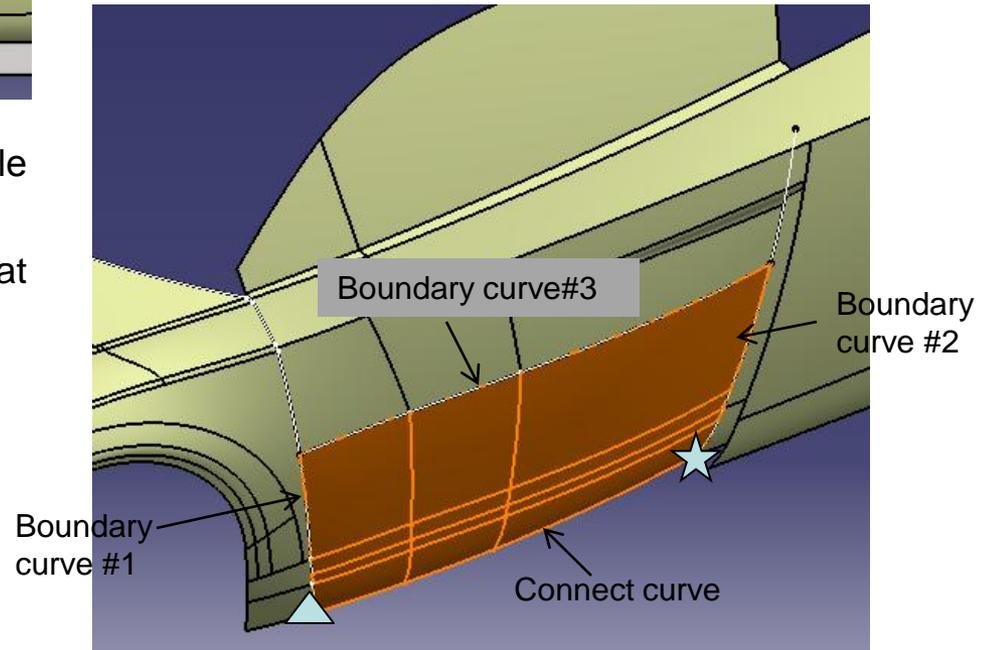
Tutorial 8C

- Create an offset plane
(Reference xy plane, Offset 520mm)



- Split surface

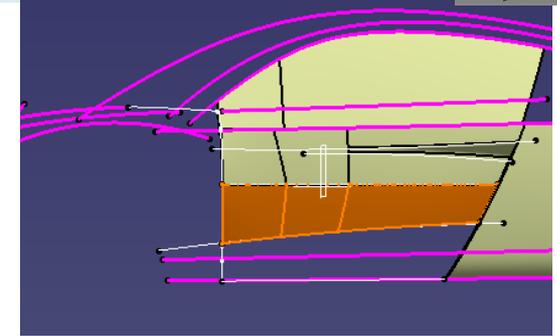
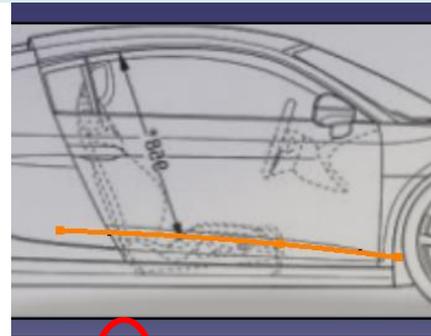
- Make the geometrical set “front_body” visible
- Create a connect curve (tangent continuity at point  ; point continuity at point )
- Create 2 boundary curves
- Create a multi-sections surface
 - Section: Boundary Curve#1, Tangent to Surface
 - Section: Boundary Curve#2, No Tangent Support
 - Guide: Boundary Curve#3, Tangent to Surface
 - Guide: Connect Curve



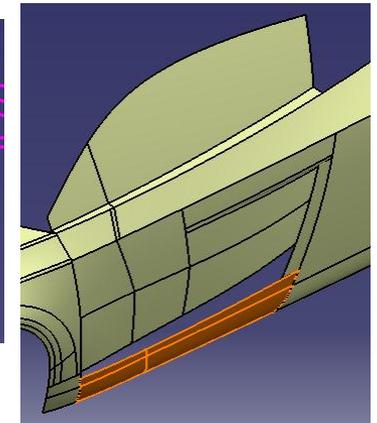
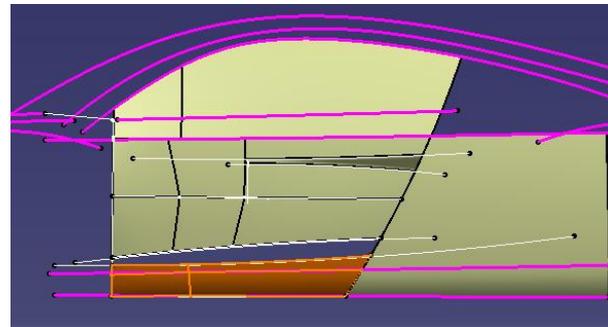
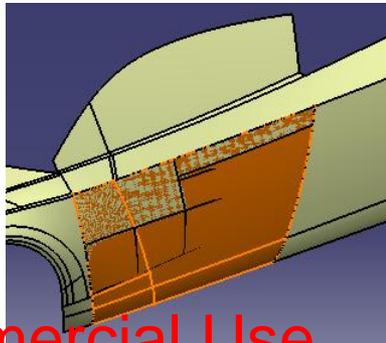
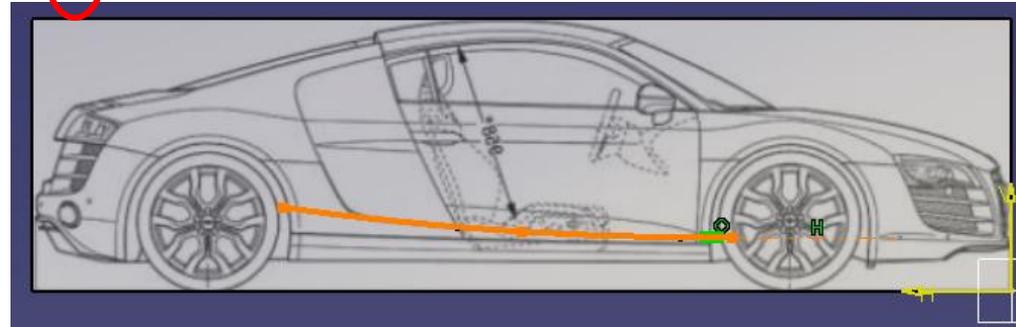
A- 41

Tutorial 8C

- Create a sketch on xz plane
(Draw a spline)
- Project it onto the surface
- Split surface

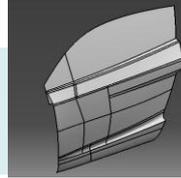


- Create a sketch on xz plane
(Draw a spline)
- Project it on the old split surface (which should be located before “Translate surface”, page 38)
- Split surface by the projected curve



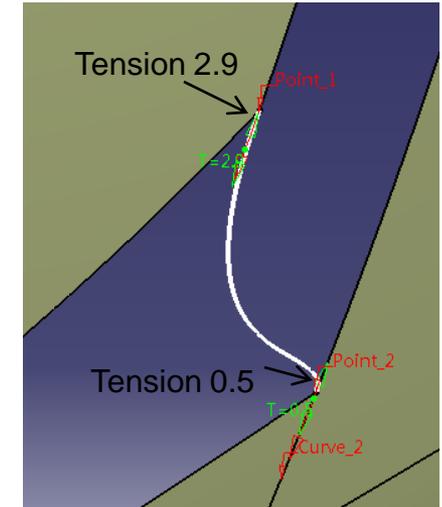
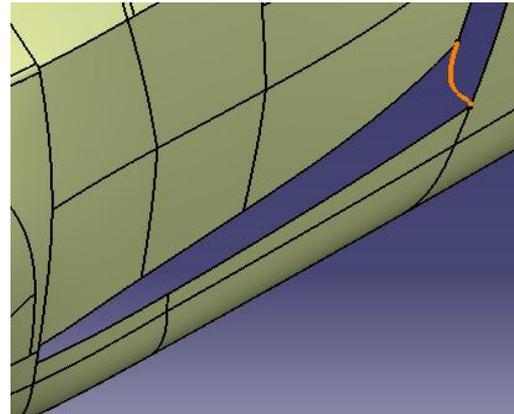
A- 42

Not For Commercial Use

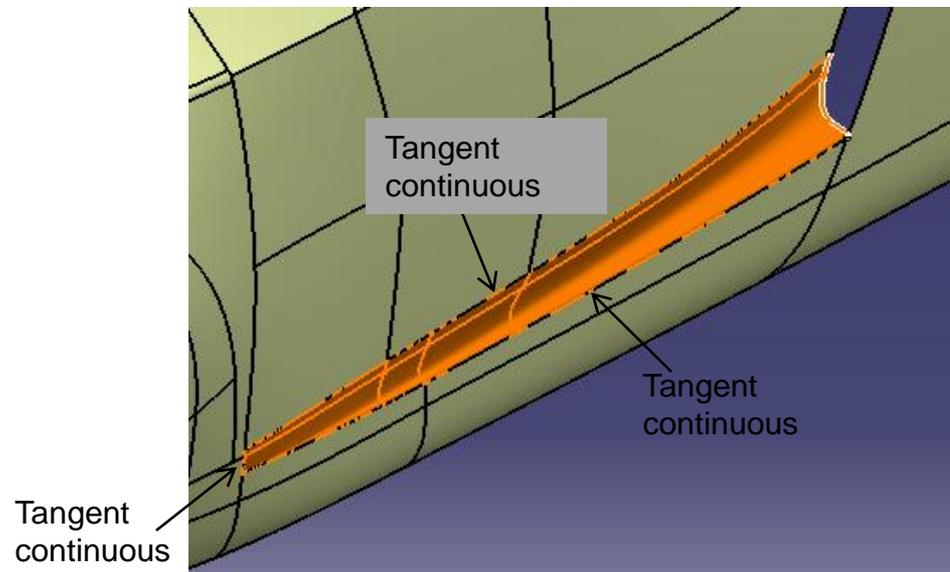


Tutorial 8C

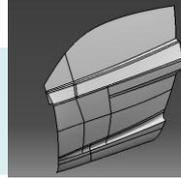
- Create a connect curve
 - First Support: tangency, tension 2.9
 - Second Support: tangency, tension 0.5



- Create a multi-sections surface
 - 4 curves, 3 supports
 - Tangent Continuity

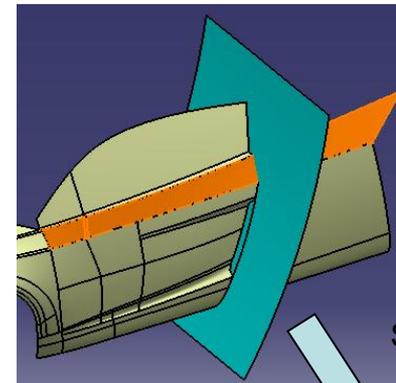
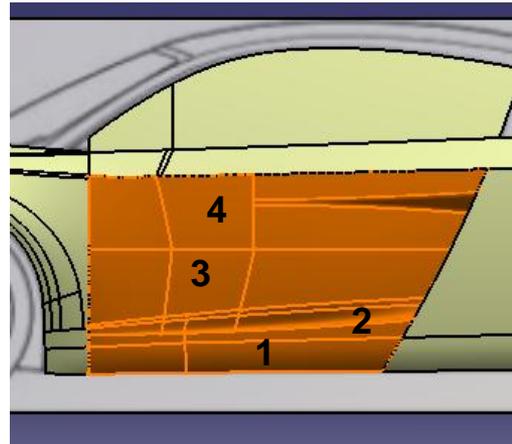


A- 43



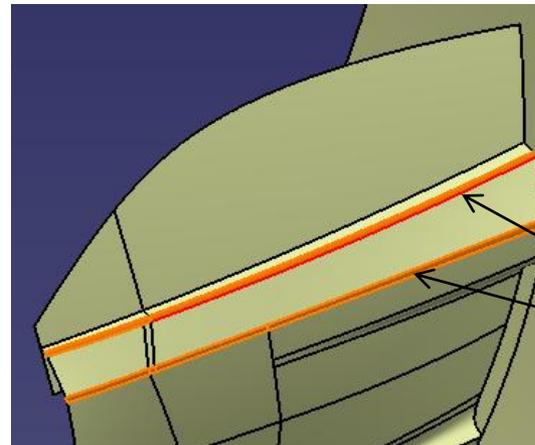
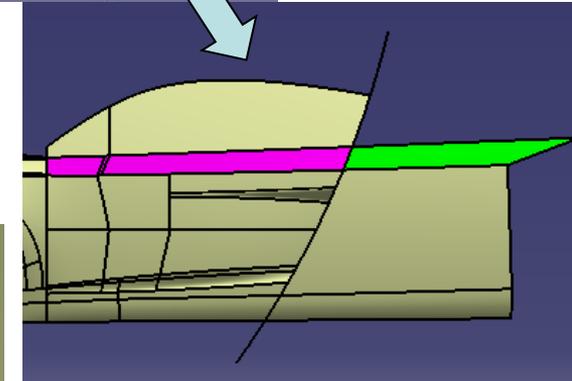
Tutorial 8C

- Join Surfaces (Total 4)



Split surface

- Split the surface into 2 (by parting surface)
- Create Shape Fillet (Surface-surface, R25mm)
- Create Shape Fillet (Surface-surface, R20mm)

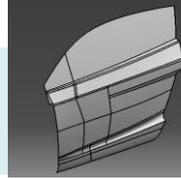


Fillet R20mm

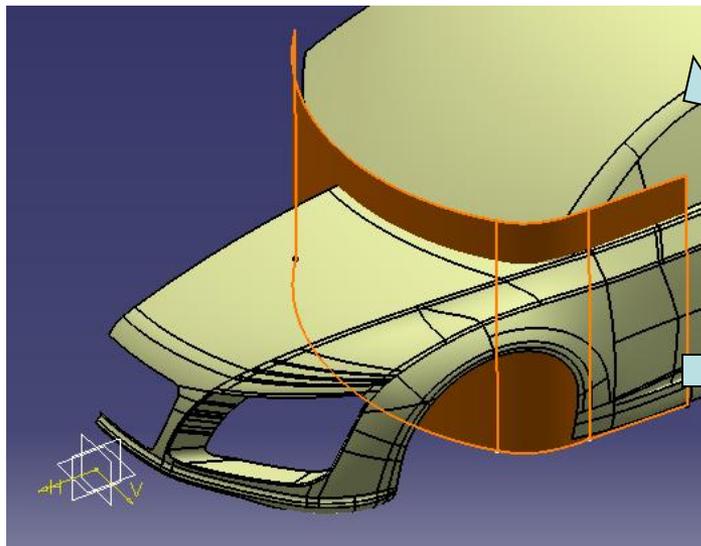
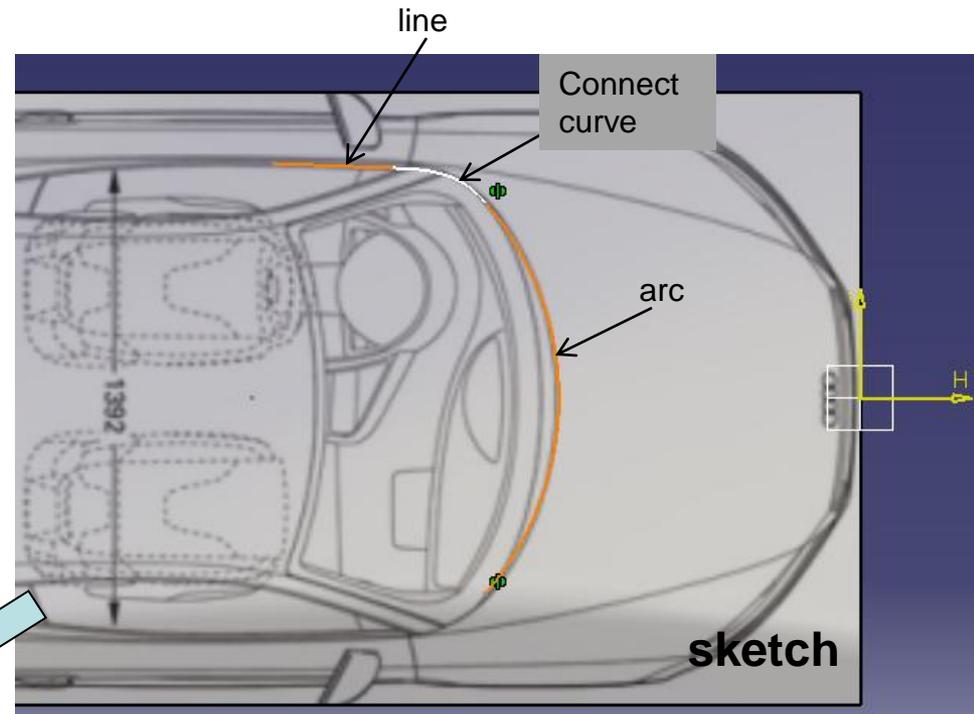
Fillet R25mm

A- 44

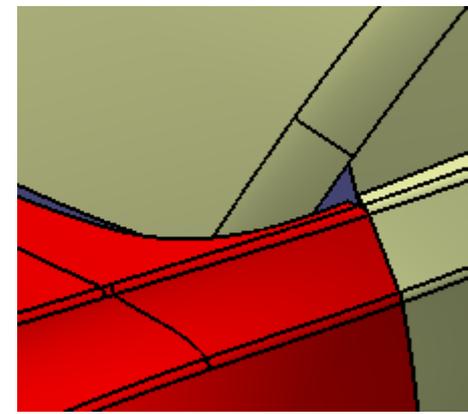
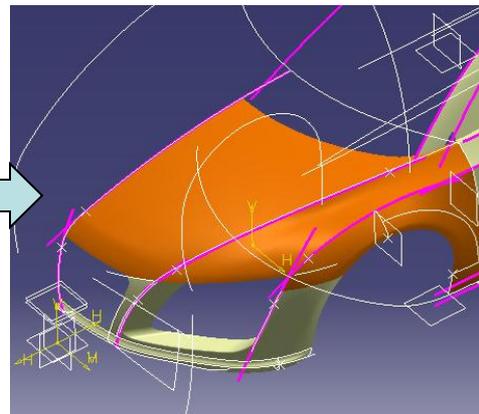
Tutorial 8C



- **Right-Click the Geometrical set “front_body”, Select “Define in work object”**
- Create a sketch on Xy plane
 - Draw a symmetric arc
 - Draw a line
 - Draw a connect curve
- Create an extruded surface (1000mm)
- Split surface by the extruded surface
- Save file “R8_master_a.catpart”

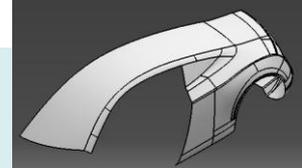


A- 45



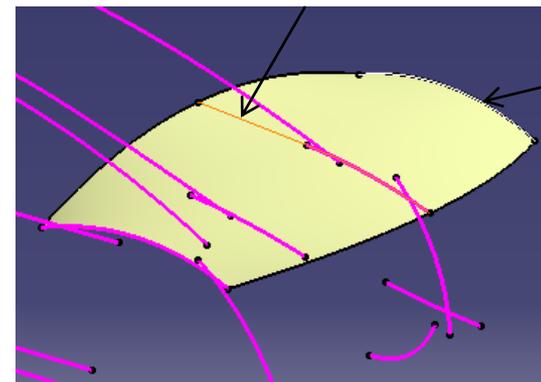
Back_body (master)

Tutorial 8D

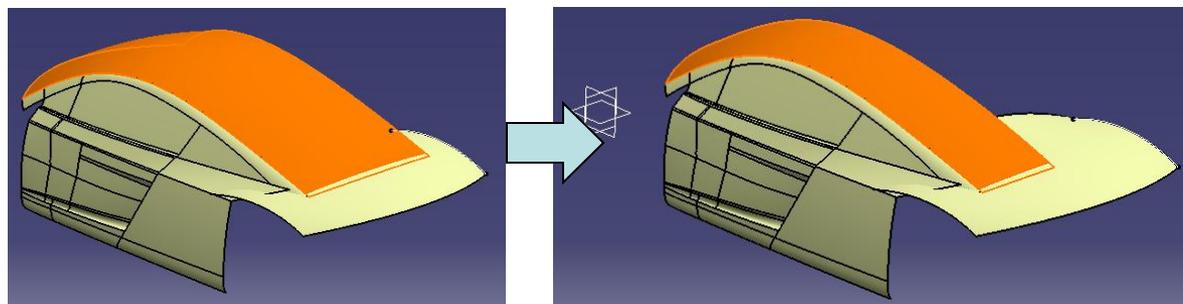


- **Insert a New geometrical set “back_body”**
- Create a symmetry curve
- Extrapolate the 3d curve (select “assemble result”)
- Create a multi-sections surface (3 sections)
- Split the old multi-sections surface by XZ plane

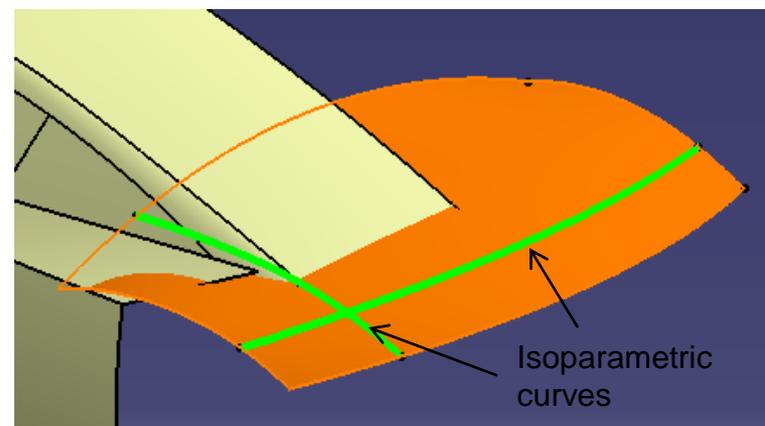
Extrapolated curve



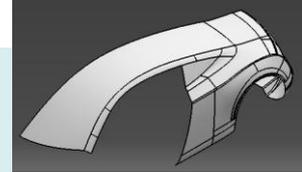
Symmetry curve



- Create Two Isoparametric curves on the multi-sections surface



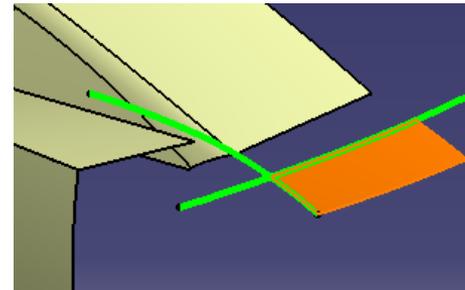
A- 46



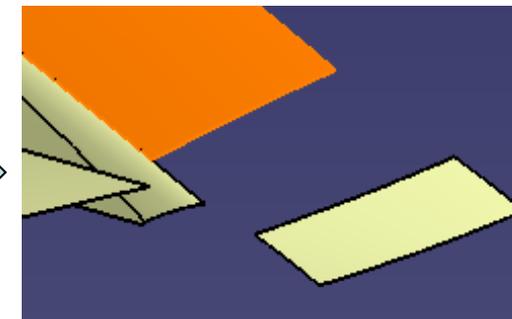
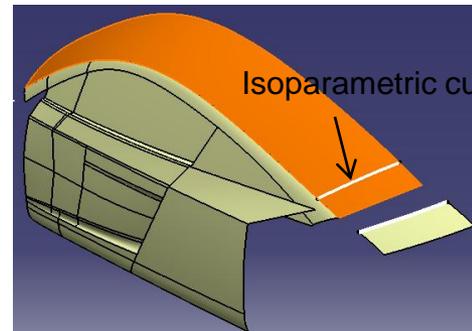
Back_body (master)

Tutorial 8D

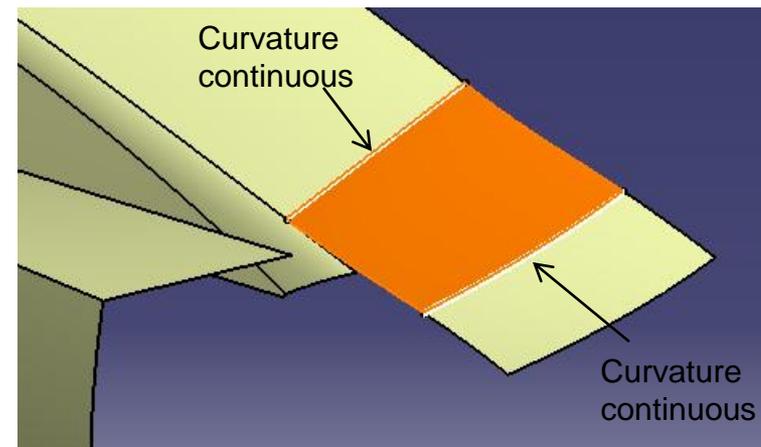
- Split the multi-sections surface by 2 iso curves & XZ plane



- Create isoparametric curve
- Split surface by this iso curve

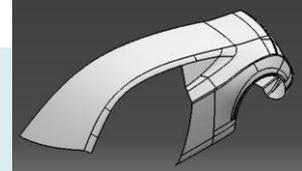


- Create a blend surface (curvature continuous on both sides, tension 0.8)



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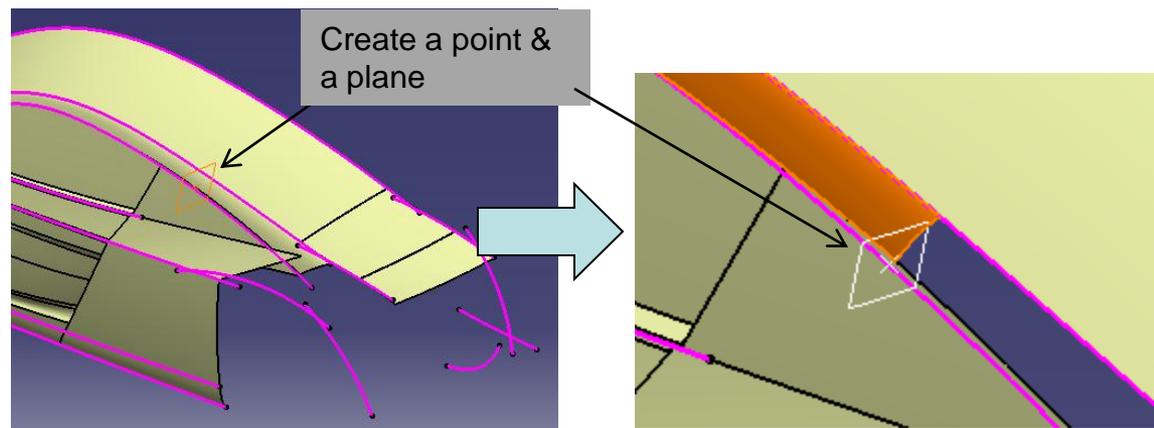
A- 47



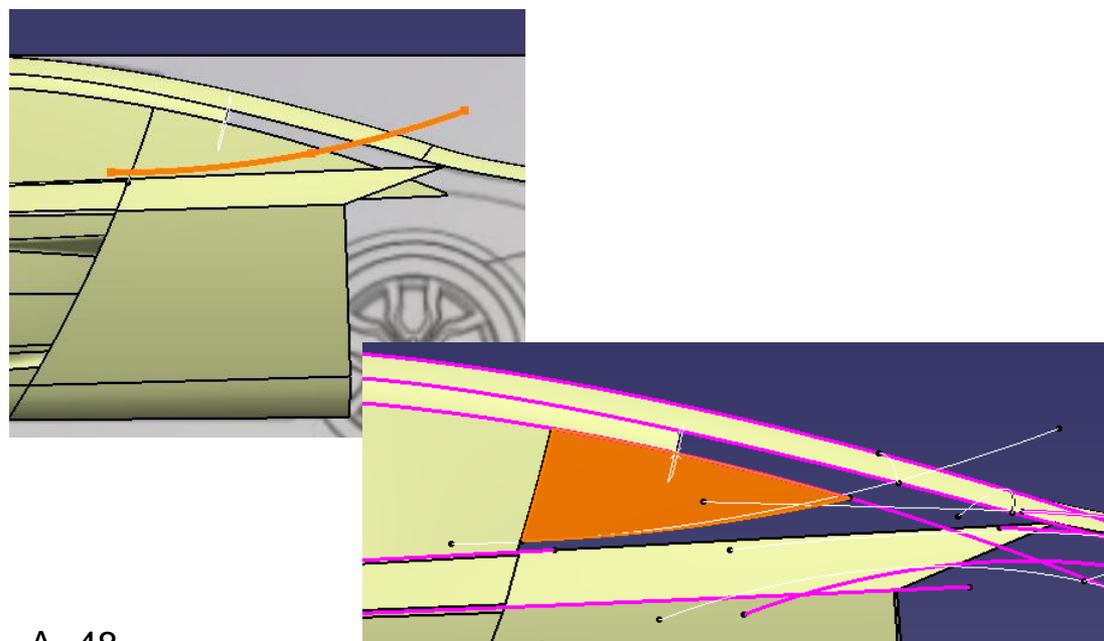
Back_body (master)

Tutorial 8D

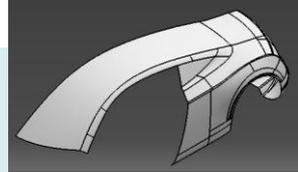
- Create a point on 3D curve
- Create a plane at the point
- Split the old blend surface by the plane



- Create a Sketch on XZ plane (Draw a spline)
- Project sketch
- Split surface by projected sketch



A- 48

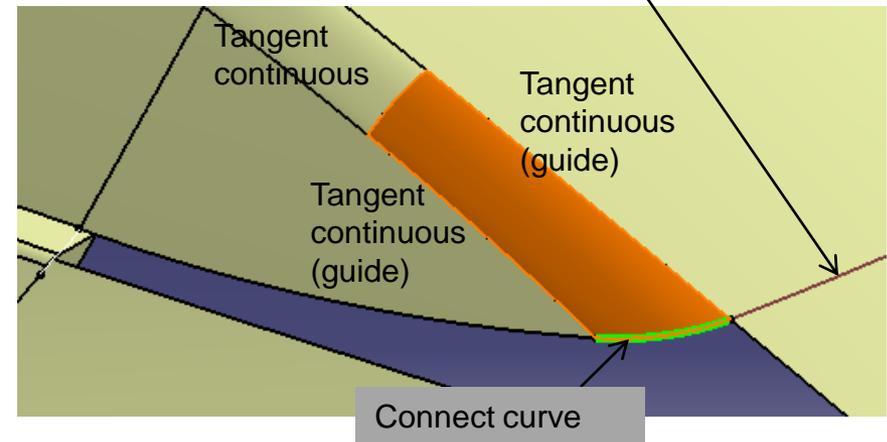
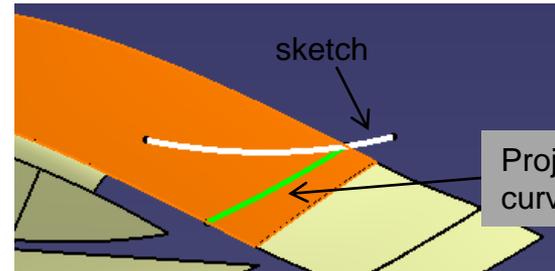


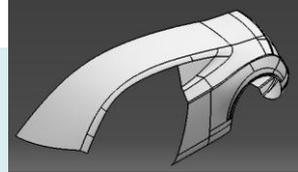
Tutorial 8D

- Project the same sketch onto the split surface
 - Direction = XZ plane

- Create a connect curve (tangent continuous on both ends)

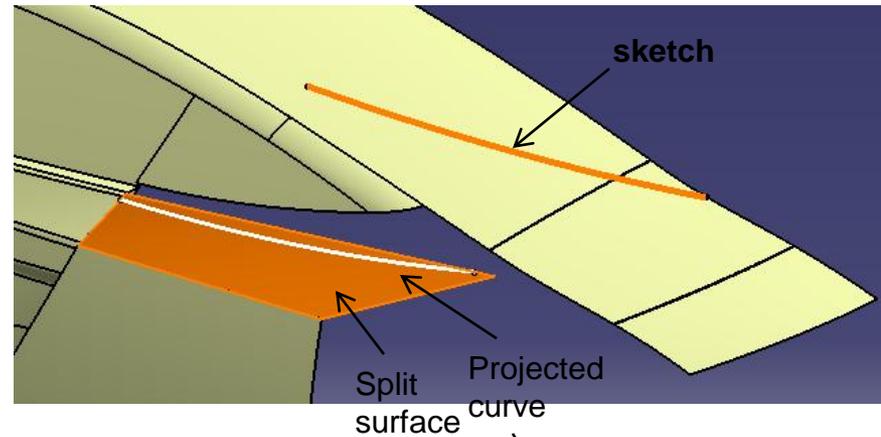
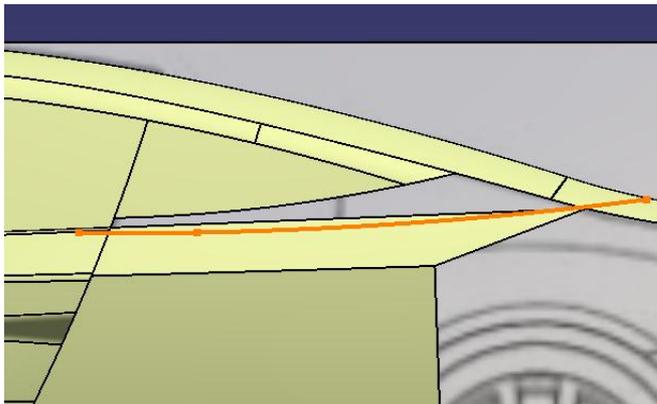
- Create a multi-sections surface
 - 2 sections (1 tangent support)
 - 2 guides (2 tangent supports)



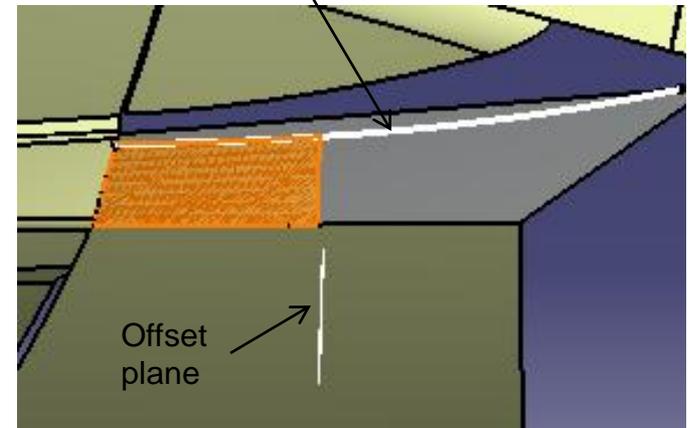
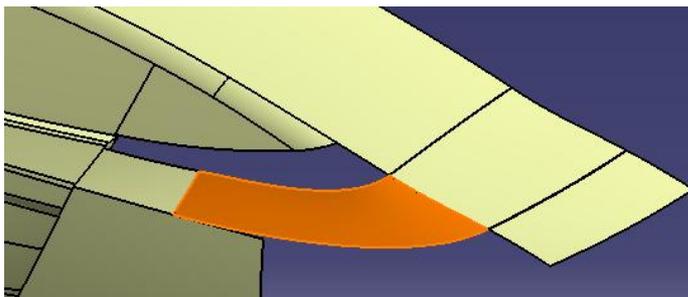


Tutorial 8D

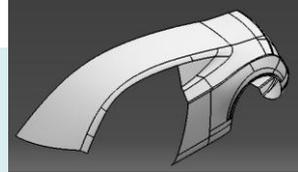
- Create a sketch on Xz plane (Draw a spline)
- Project Sketch on the split surface



- Create an offset plane (Yz plane, 3100mm)
- Split surface by projected sketch & offset plane
- Create a blend surface (curvature continuous)

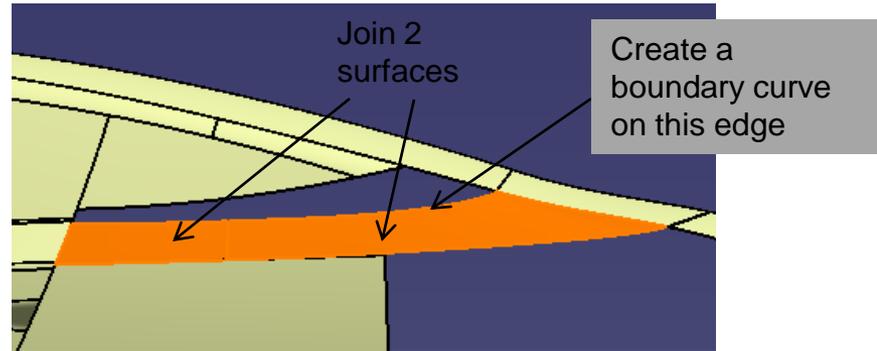


A- 50

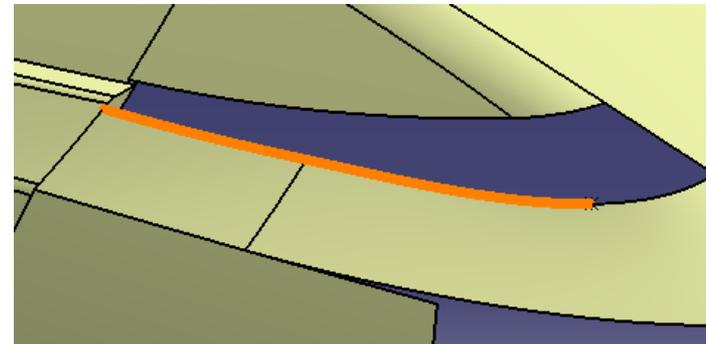
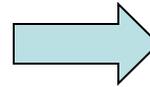
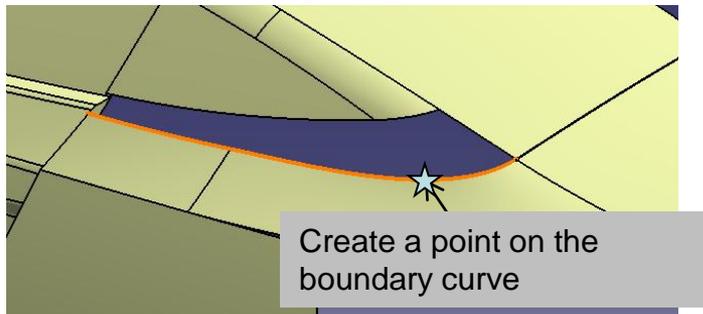


Tutorial 8D

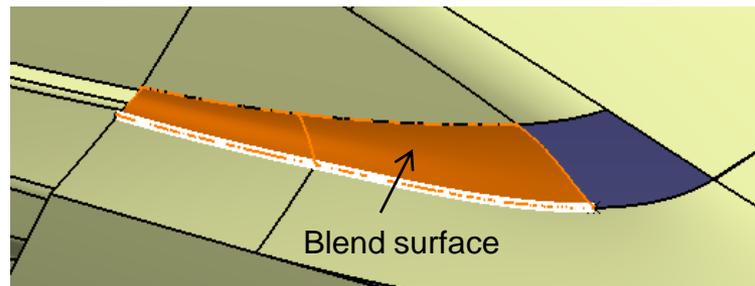
- Join two surfaces
- Create a boundary curve



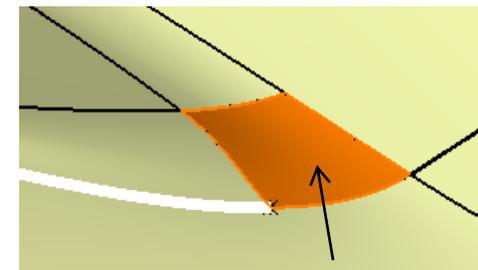
- Create a point on the boundary curve
- Split the curve by the point



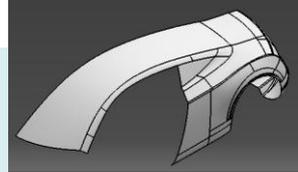
- Create a blend surface (curvature continuous)
- Create a fill surface (curvature continuous)



A- 51

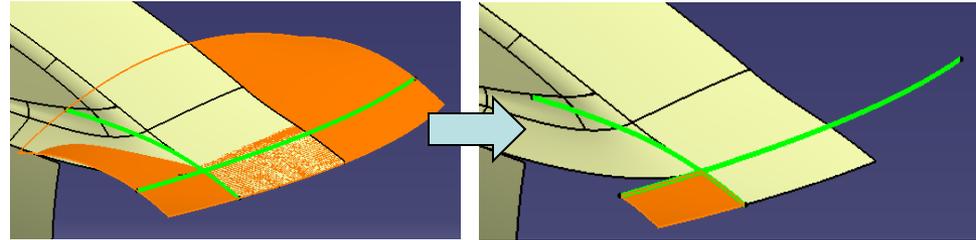


Fill Surface

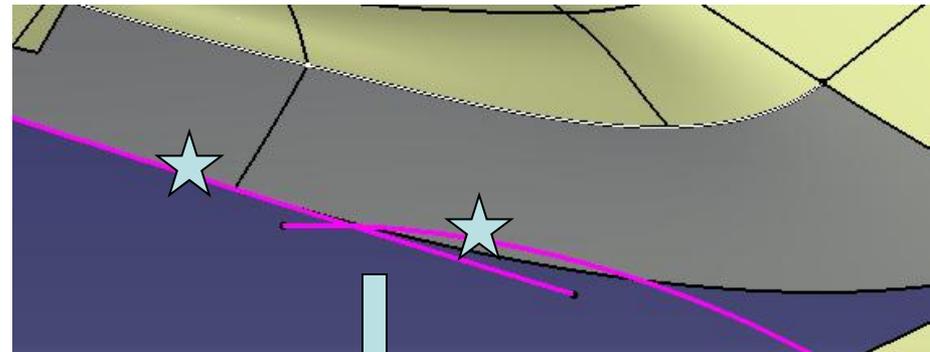


Tutorial 8D

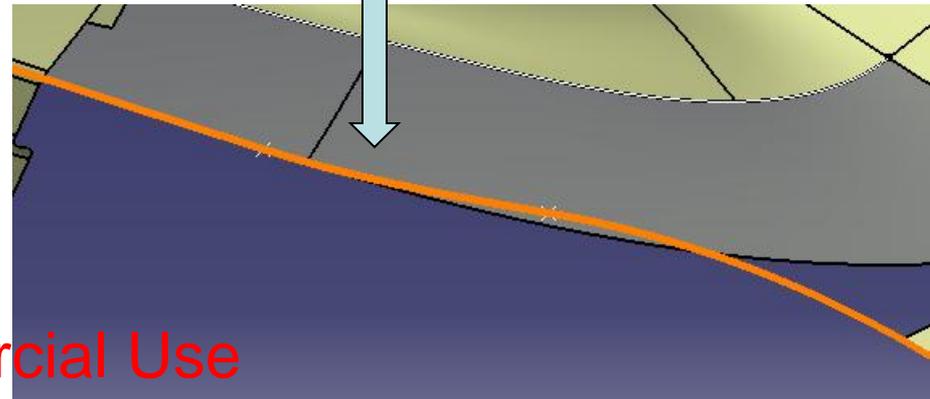
- Show the multi-sections surface (1st surface in this geometrical set)
- Show the two isoparametric curves
- Split the surface by these two curves



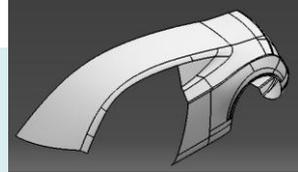
- Create a point on 3D curve ★
- Create a point on another 3D curve ★



- Create a connect curve between the two 3d curves (select “trim elements”)

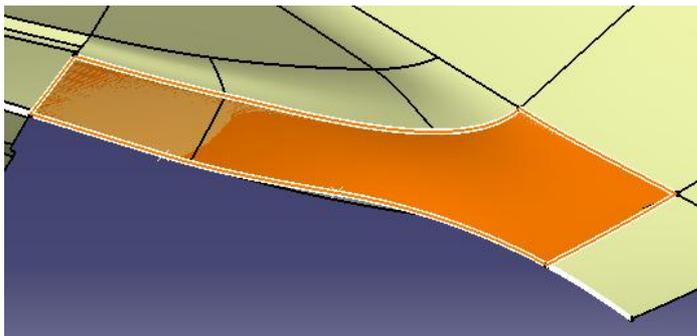
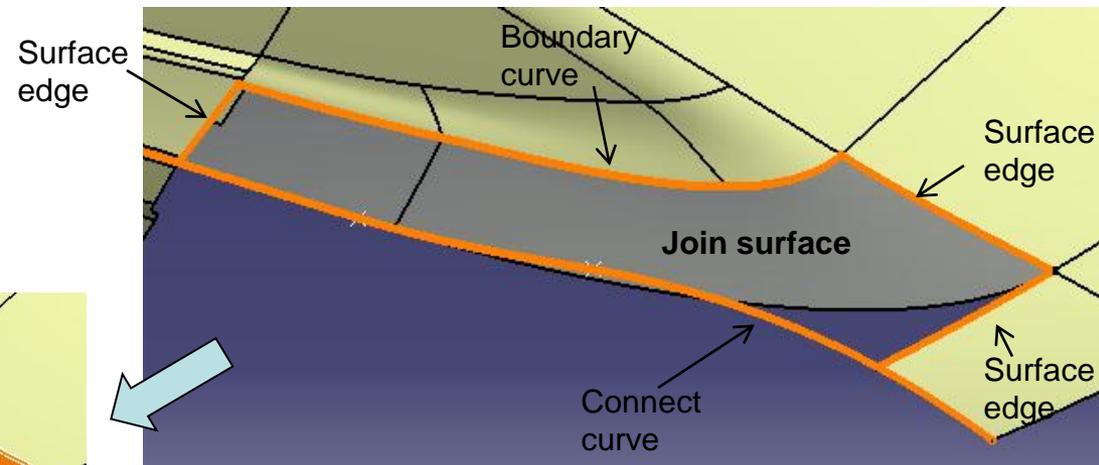
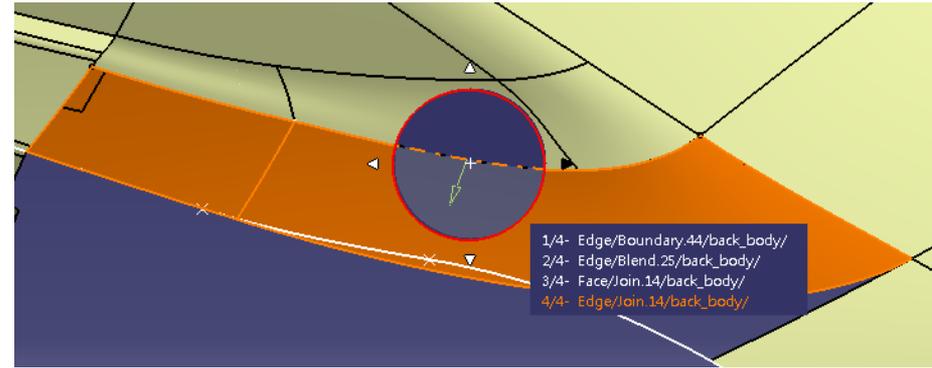


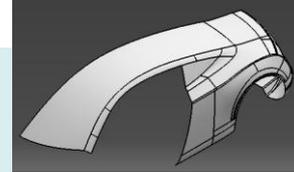
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Tutorial 8D

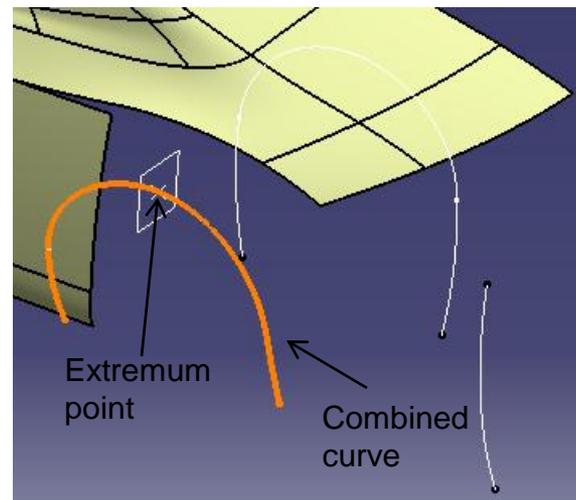
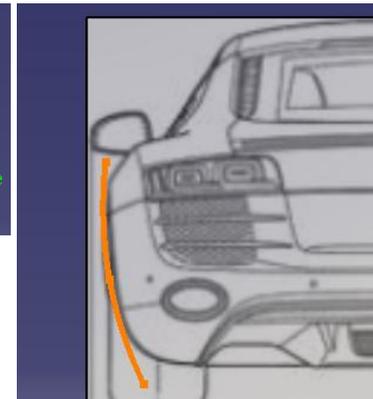
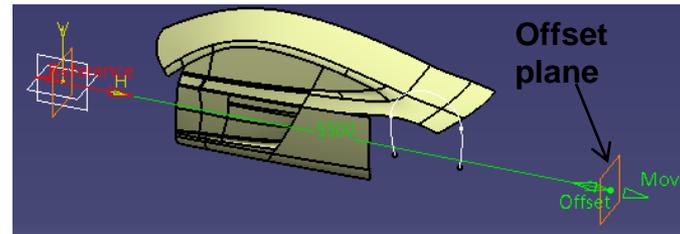
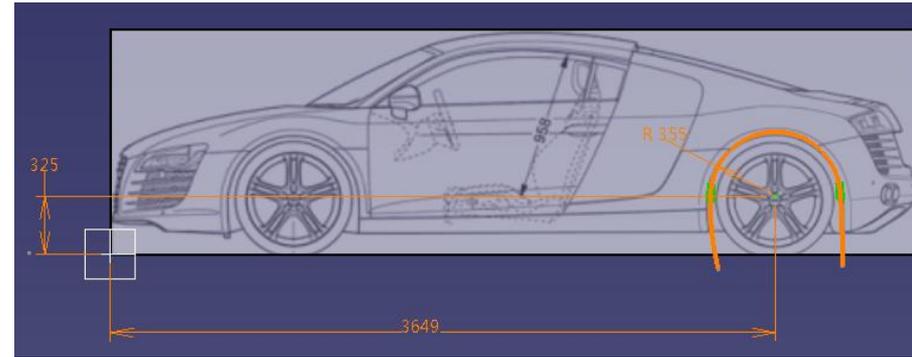
- Select an edge of the Join Surface
(tip: move the mouse cursor on it, then press “↑” key on the keyboard, so that we can select it on a selection list)
- Create a Boundary curve
- Create a Fill surface
5 Curves / but 4 Supports
- Hide the Join Surface



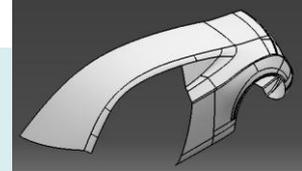


Tutorial 8D

- Create a sketch (3 arcs , Dia355mm, 3649mm)
- **Create an offset plane at the back (Yz plane, 5500mm)**
- Create a sketch (Draw a spline, 3 points)
- Create a combined curve (from the above 2 sketches)
- Create a extremum point on the combined curve
- Create a plane at the point

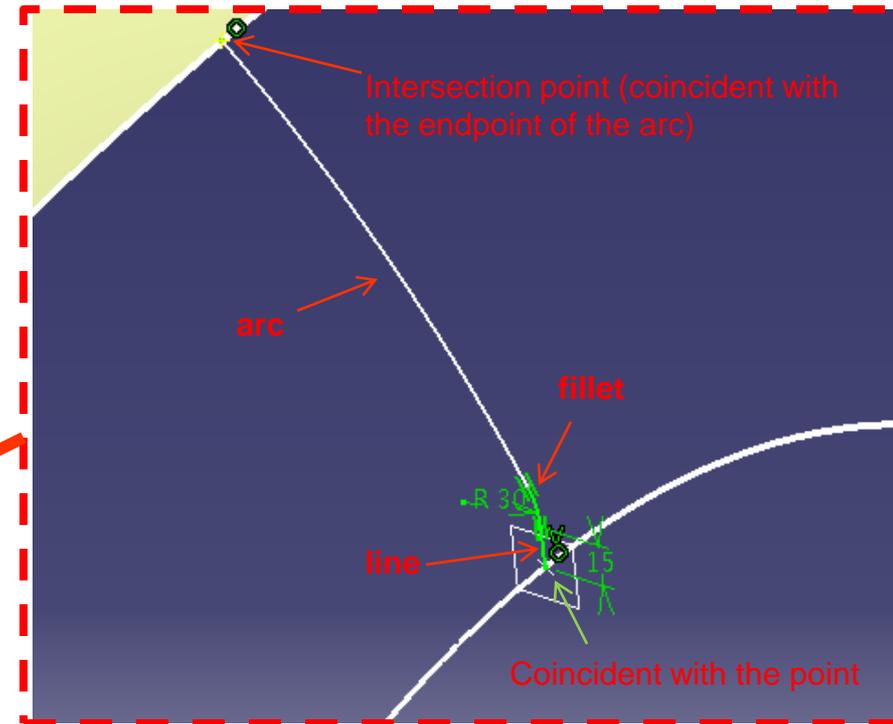
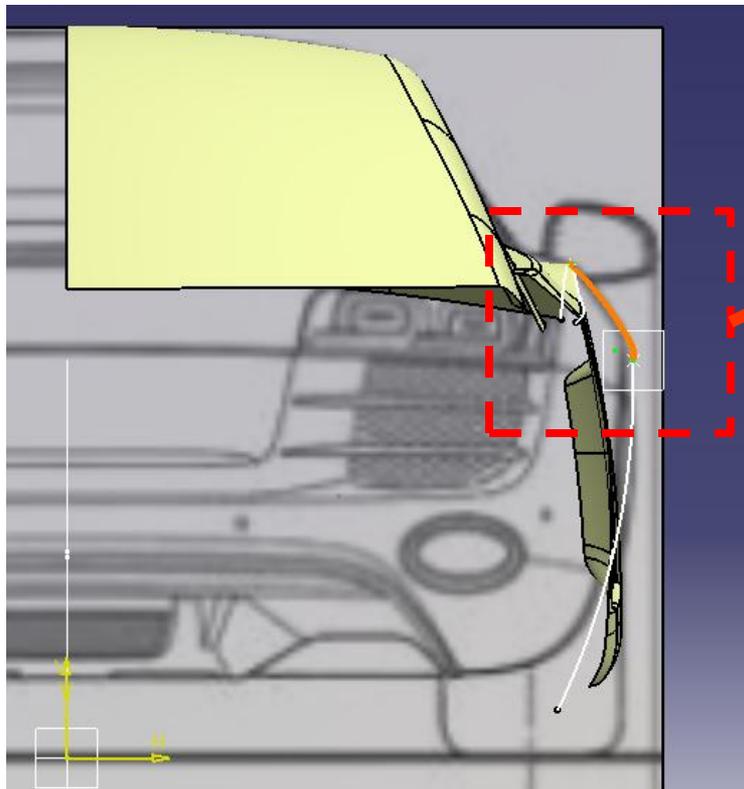


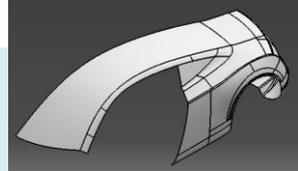
A- 54



Tutorial 8D

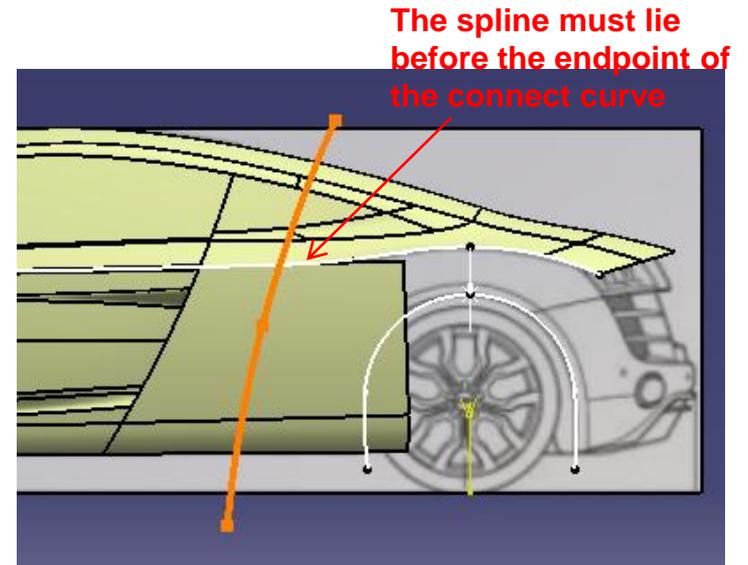
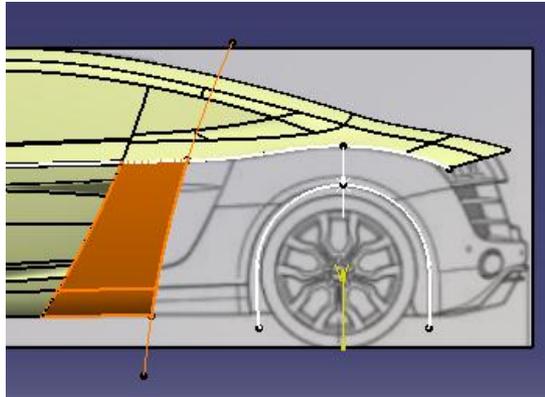
- Create a sketch on the plane
(Draw a line (15mm), arc, fillet R30mm)



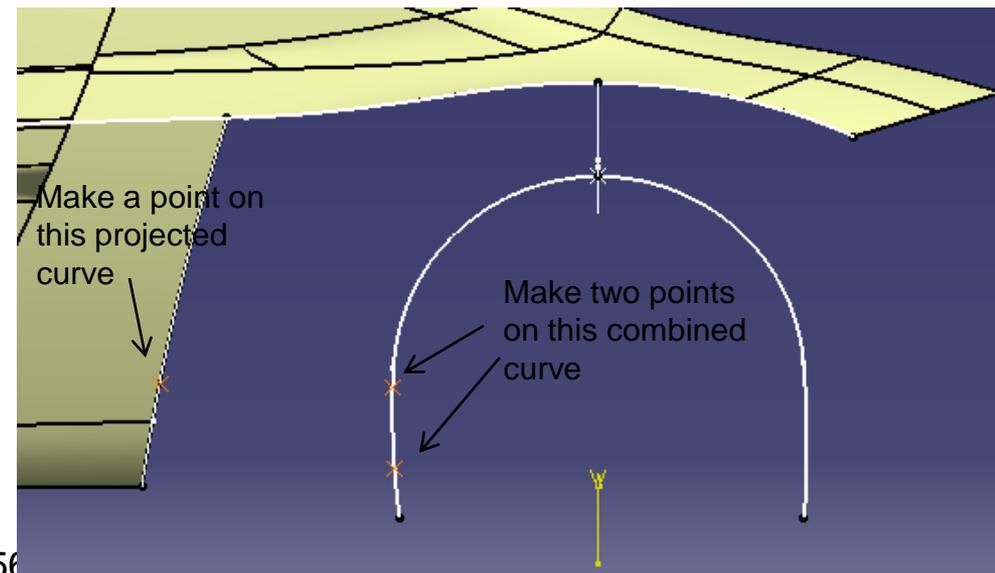


Tutorial 8D

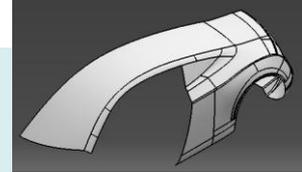
- Create a sketch on Xz plane (Draw a spline)
- Project sketch
- Split the surface by projected sketch



- Create 2 points on the combined curve (as shown)
- Create another point on the projected curve (as shown)

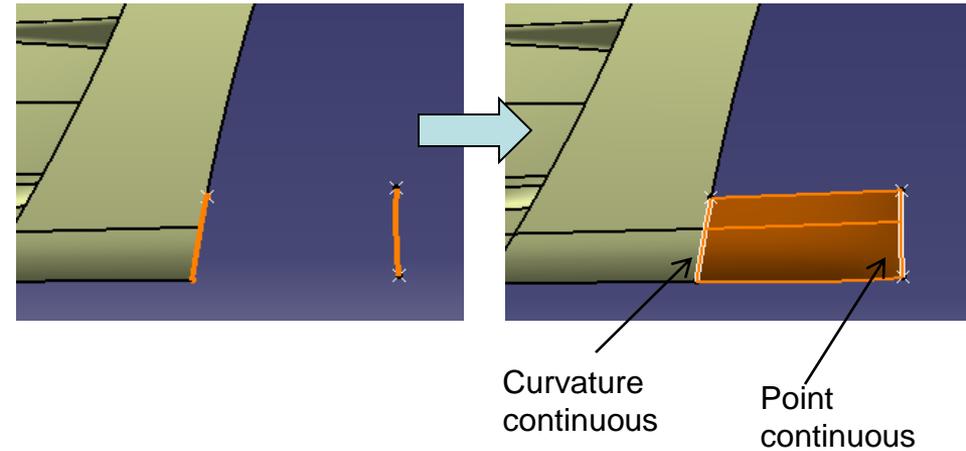


A- 56

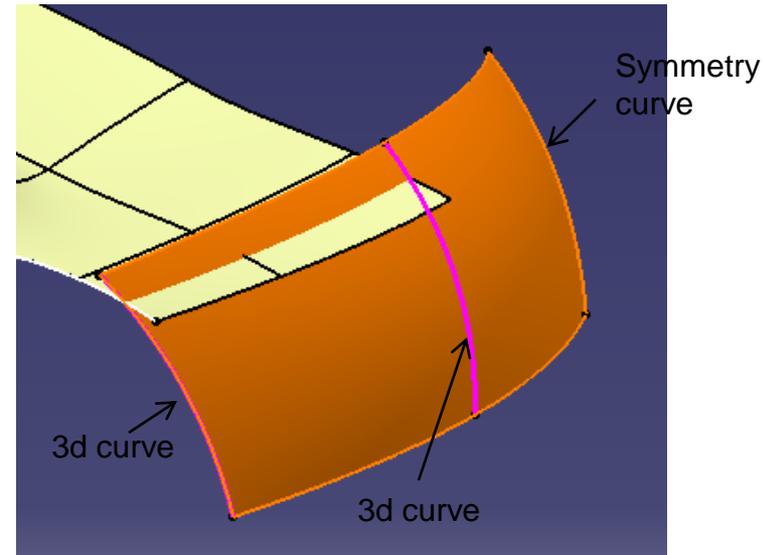
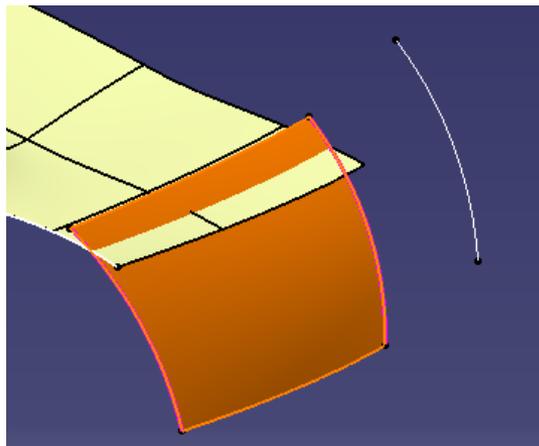


Tutorial 8D

- Create a split curve by two points
- Create another split curve by one point
- Create a blend surface (Curvature continuous on one end, point continuous on other end)

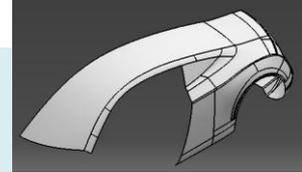


- Create a symmetry curve
- Create a multi-sections surface (3 sections)
- Split the surface by XZ plane



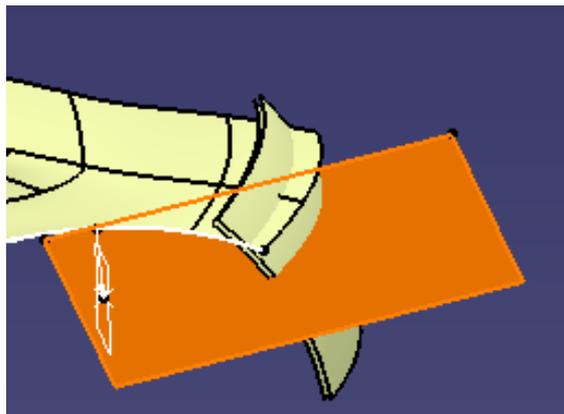
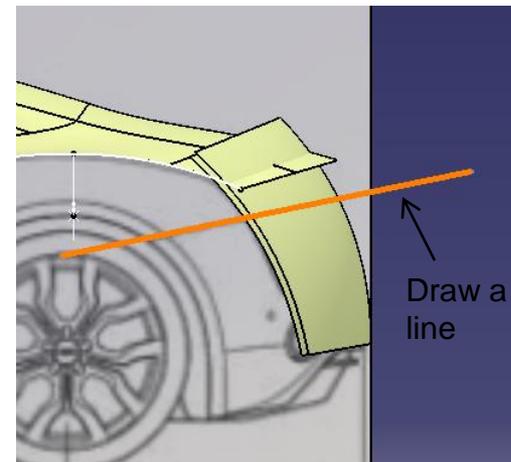
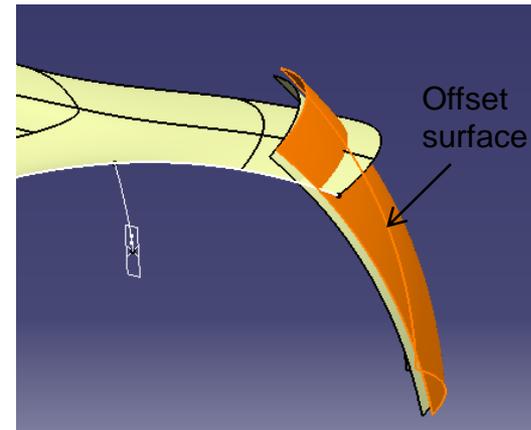
Not For Commercial Use

A- 57

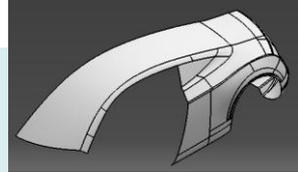


Tutorial 8D

- Create an offset surface (20mm, **outward**)
- **Right-Click Geometrical set “parting_surface”, then select “Define in work object”**
- Create a sketch on XZ plane (Draw a line)
- Create an extruded surface (1500mm)

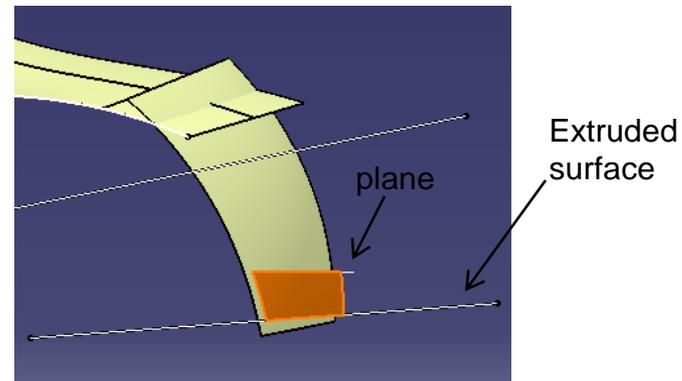
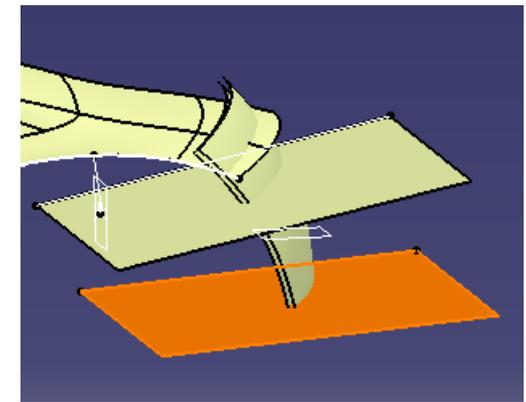
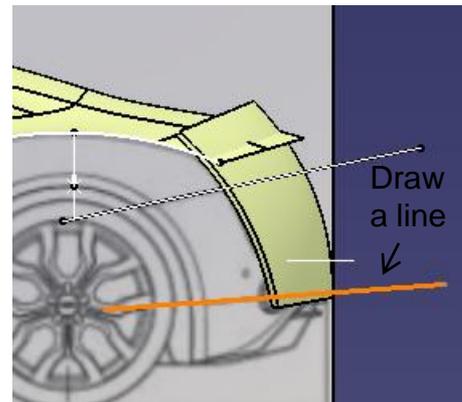
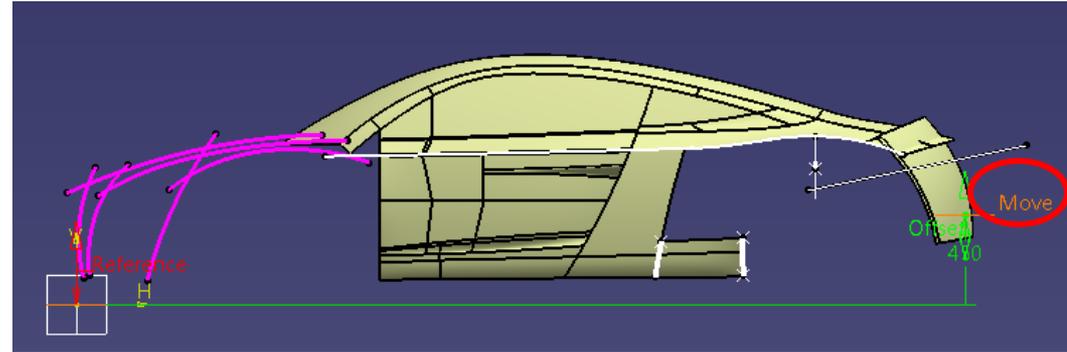


A- 58

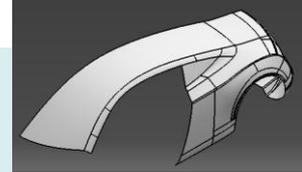


Tutorial 8D

- **Right-Click geometrical set “back-body”, then select “Define in work object”**
- Create an offset plane (450mm from XY plane; **“Move”** the plane near the rear surfaces)
- Create a sketch on XZ plane (Draw a line)
- Create an extruded surface (1500mm)
- Split the offset surface (by the plane & the extruded surface)

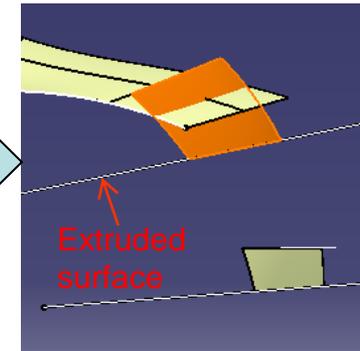
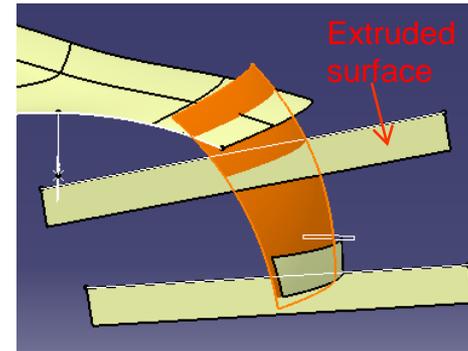


A- 59

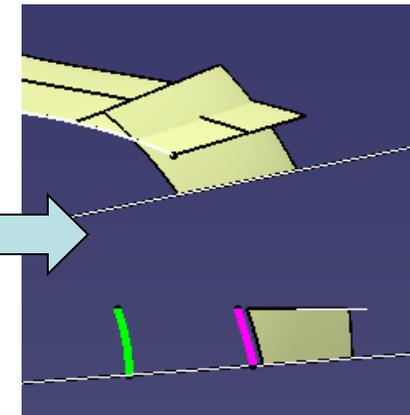
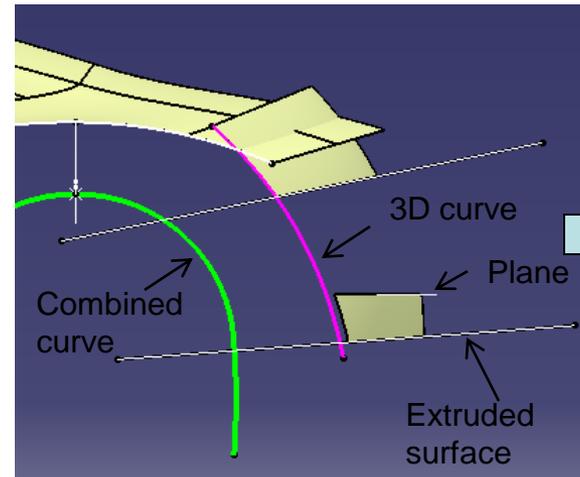


Tutorial 8D

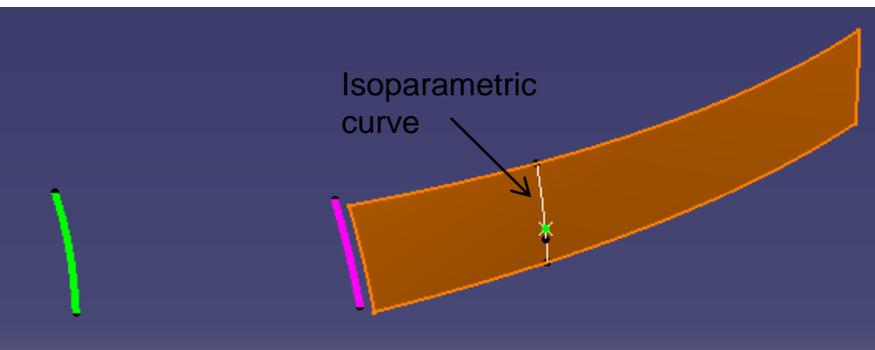
- Split surface by the Extruded Surface



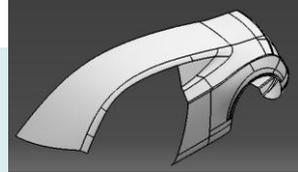
- Split the 3d curve (by a plane & an extruded surface)
- Split the combined curve ((by a plane & an extruded surface)



- Create a isoparametric curve



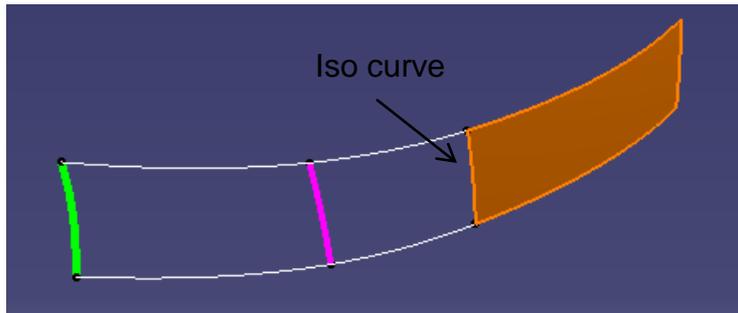
A- 60



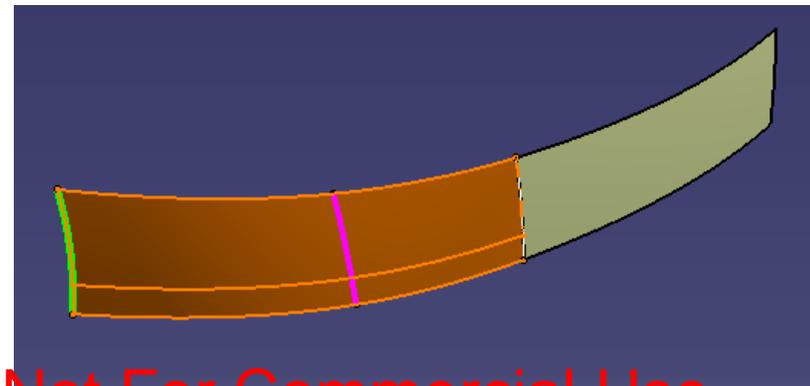
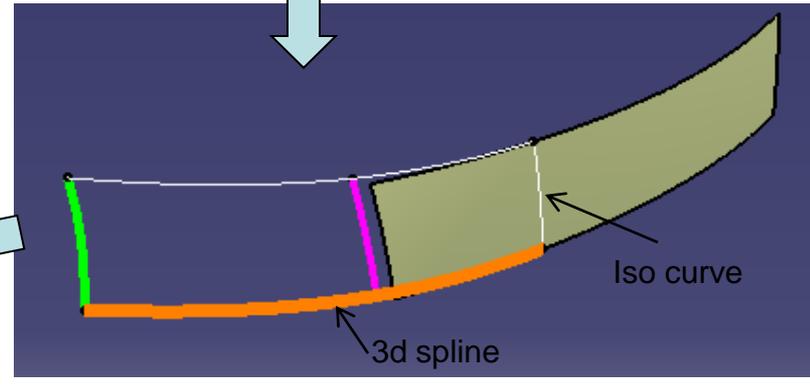
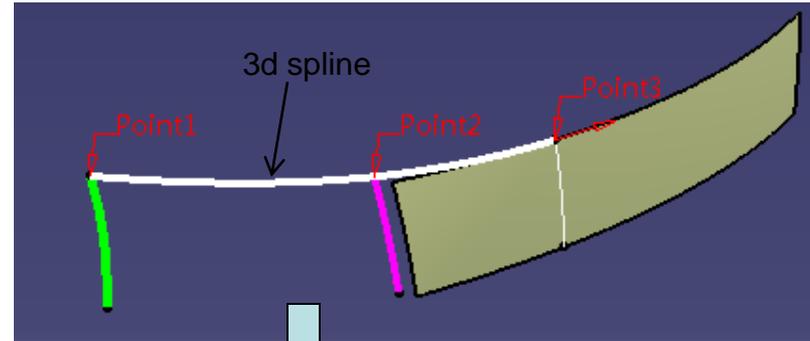
Tutorial 8D

- Create a 3d spline curve (3 points, tangent to the surface edge)
- Similarly, Create another 3d spline curve (3 points, tangent to the surface edge)

- Split surface by the iso curve

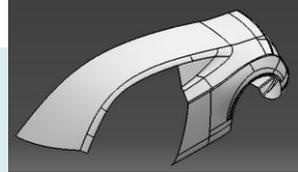


- Create a multi-sections surface
 - 3 Sections, 1 tangent support
 - 2 Guides



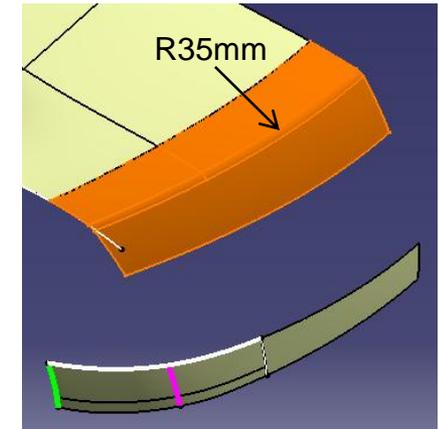
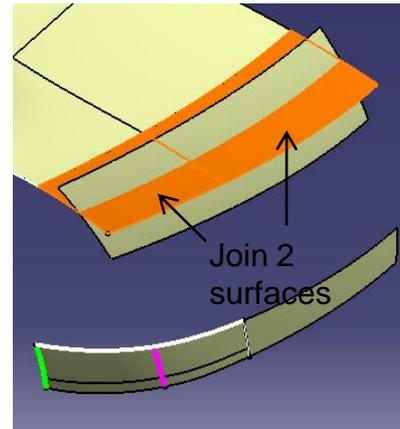
A- 61

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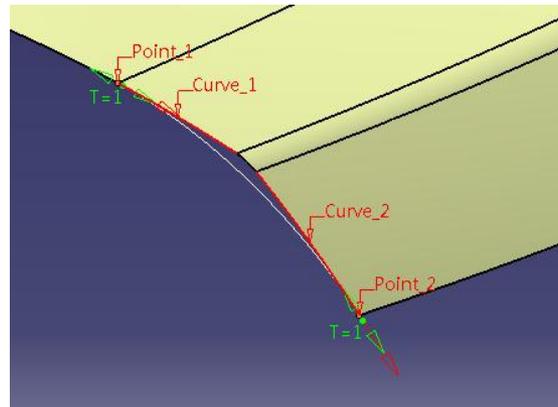


Tutorial 8D

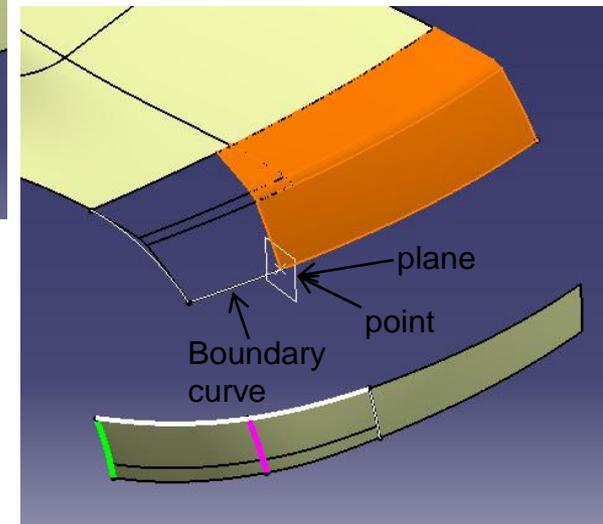
- Join 2 surfaces
- Create a shape (surface-surface) fillet (R35mm)



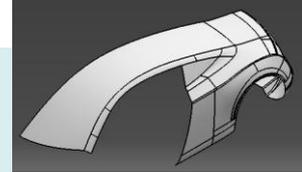
- Create a connect curve (tangent continuous on both sides)



- Create a boundary curve
- Create a point on the curve
- Create a plane at the point
- Split the fillet surface by the plane

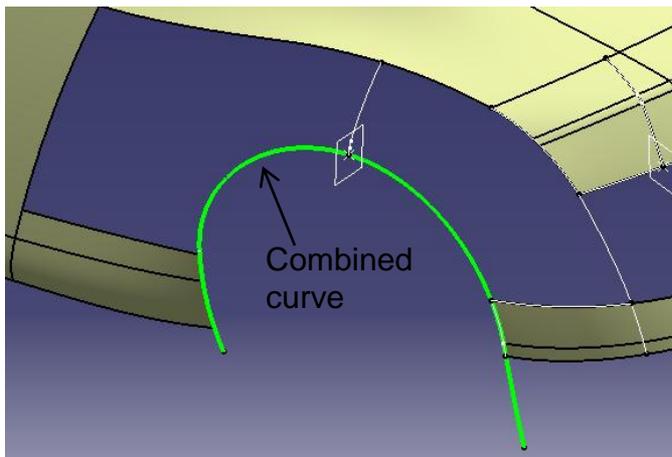
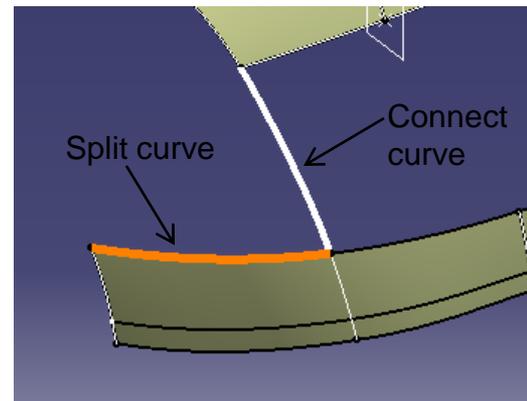
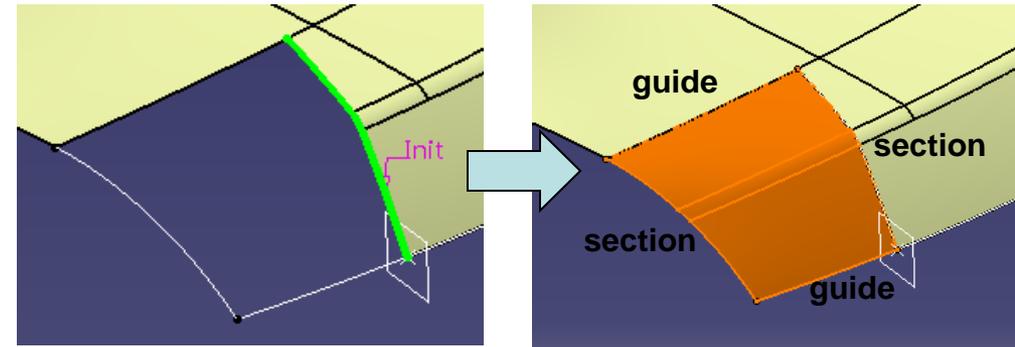


A- 62

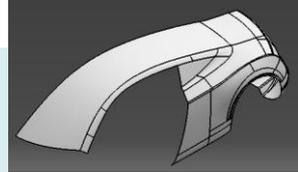


Tutorial 8D

- Create another boundary curve
- Create a multi-sections surface
 - 2 sections, 1 tangent support
 - 2 guides, 1 tangent support
- Create a connect curve (curvature continuous on both sides)
- Split the curve/edge by this connect curve
- Show the combined curve



A- 63



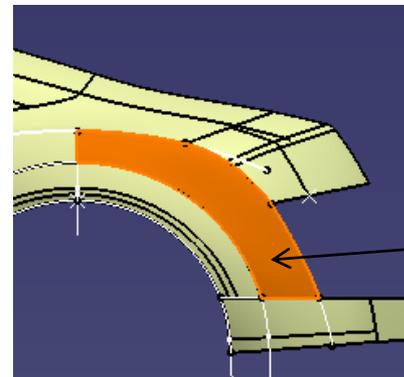
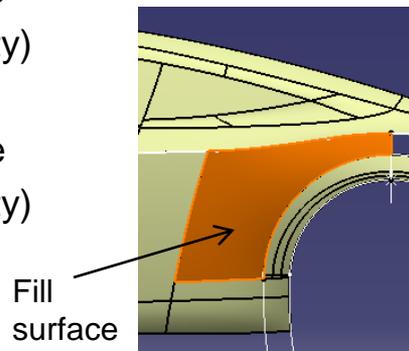
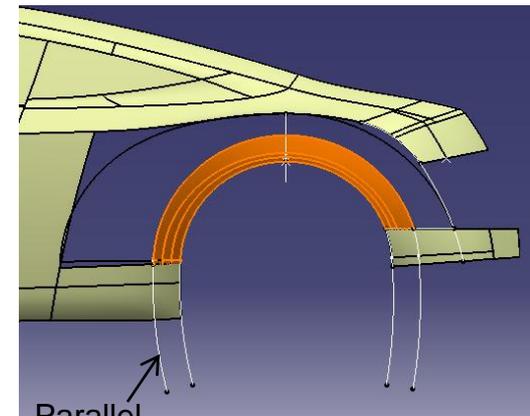
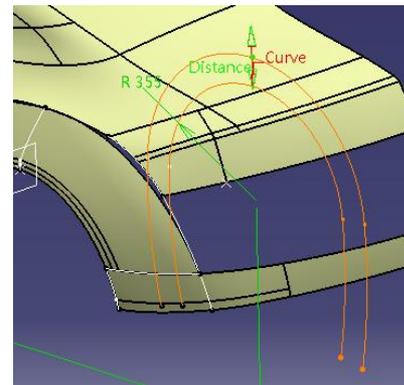
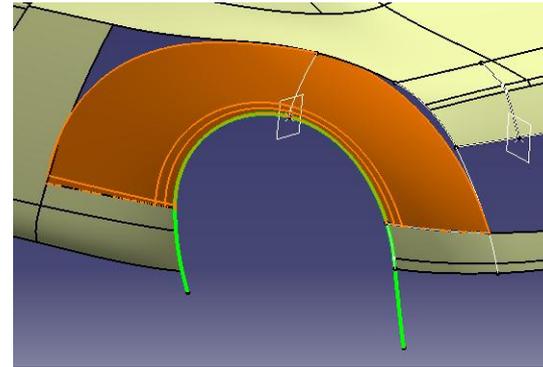
Tutorial 8D

- Create a multi-sections surface
 - 3 Sections, 2 tangent supports
 - 1 guide

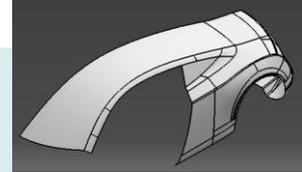
- Create a parallel curve (~80mm offset from the sketch on XZ plane)
- Project curve onto the multi-sections surface
- Split surface

- Create a fill surface (curvature continuity)

- Create a fill surface (curvature continuity)

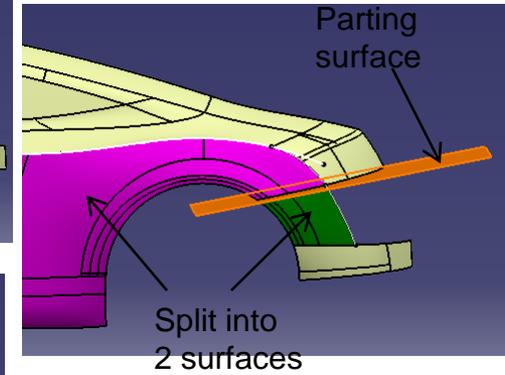
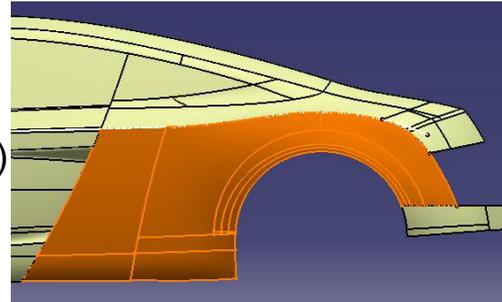


A- 64

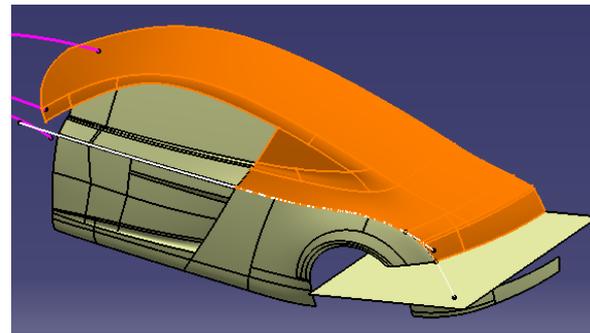


Tutorial 8D

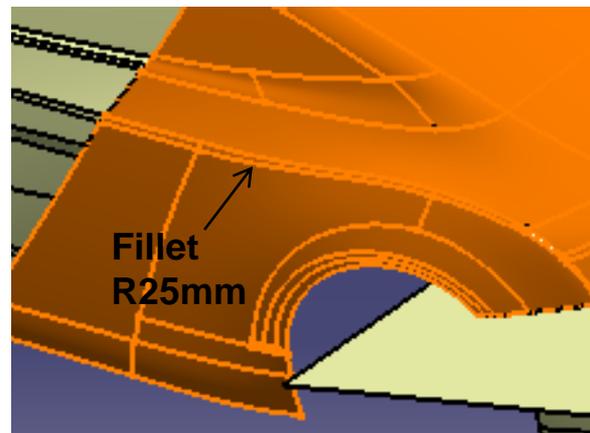
- Join surfaces (as shown)
- Split the surface **into 2** (by a parting surface)



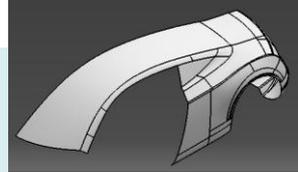
- Join (top) surfaces (as shown)



- Create a shape fillet (surface-surface) (R25mm)

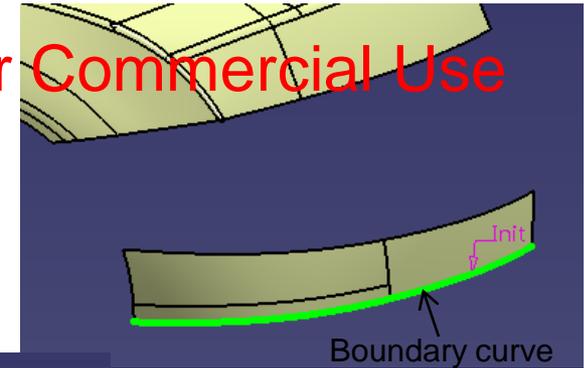
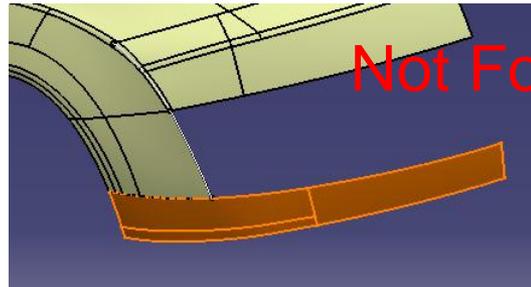


A- 65

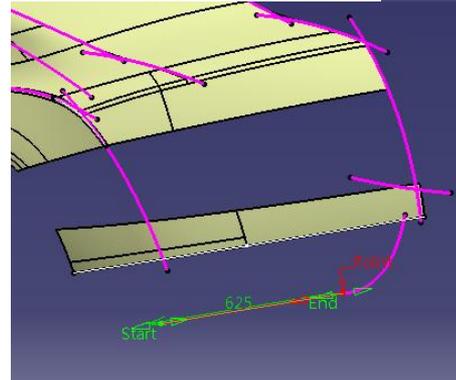


Tutorial 8D

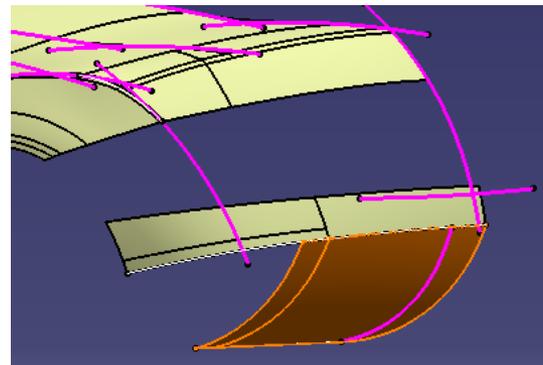
- Join surfaces
- Create a boundary curve



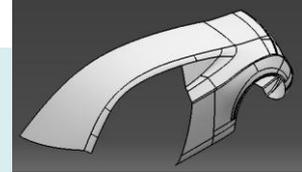
- Create a line (625mm, from end point of the 3d curve; direction: Xz plane)



- Create a swept surface
 - Profile Type: Circular
 - Subtype: Two guides & radius
 - Select the boundary curve as guide1
 - Select the line as guide 2
 - Radius =450mm
 - Select the line as the spine

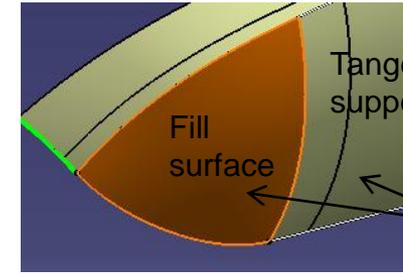
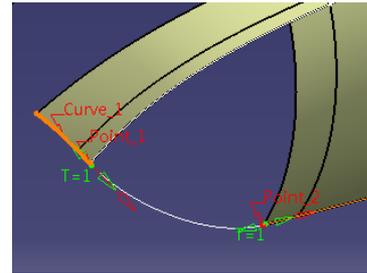


A- 66

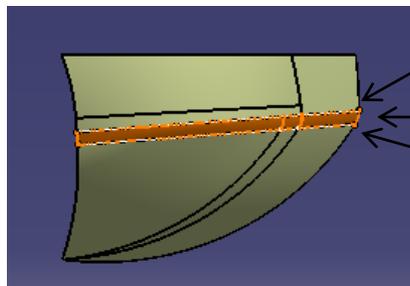
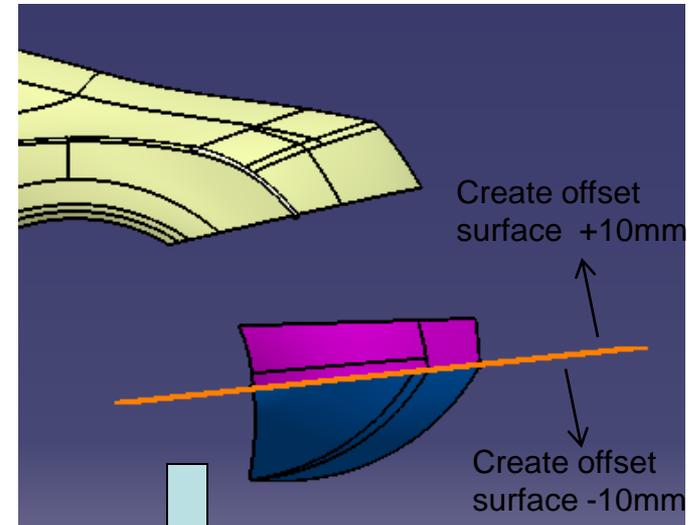


Tutorial 8D

- Create a connect curve
- Create a fill surface
(3 edges, 1 tangent support)

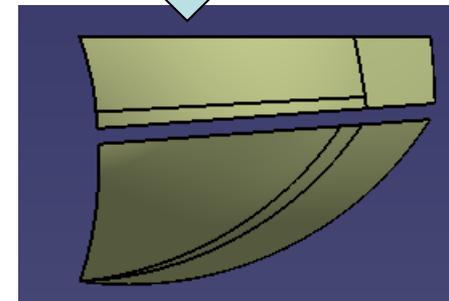


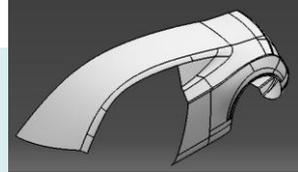
- Join two surfaces
- Create an offset surface (10mm)
- Create an offset surface (-10mm)
- Split Upper Join surface by the upper offset surface
- Split Lower Join surface by the lower offset surface
- Create a boundary curve
- Create a boundary curve
- Create a blend surface
(tangent continuous on both sides)



Boundary curve
blend
Boundary curve

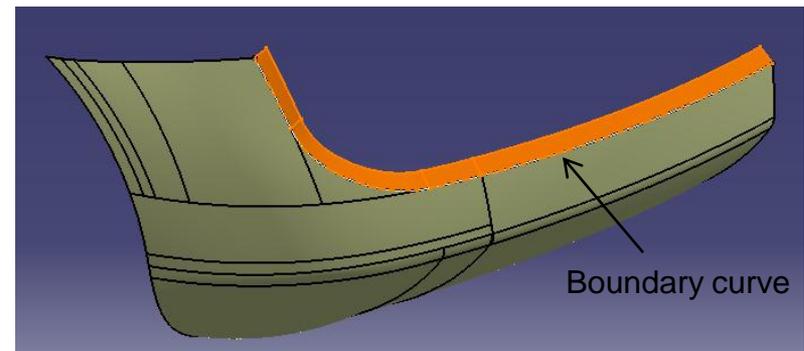
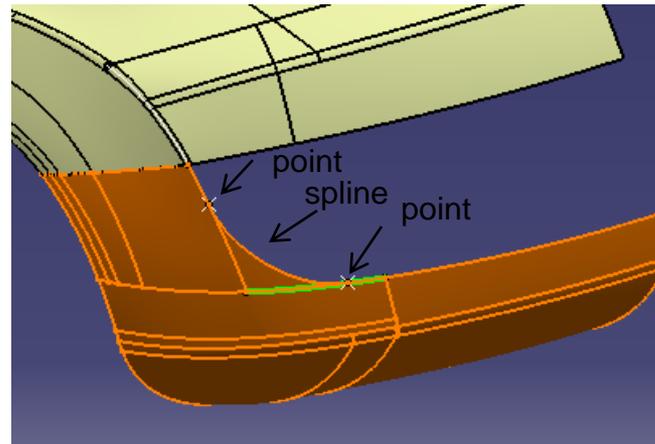
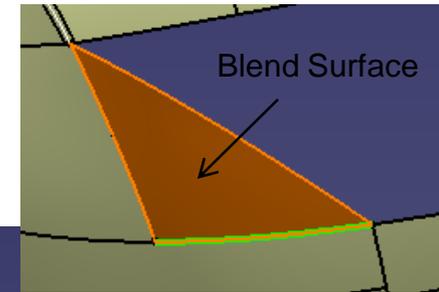
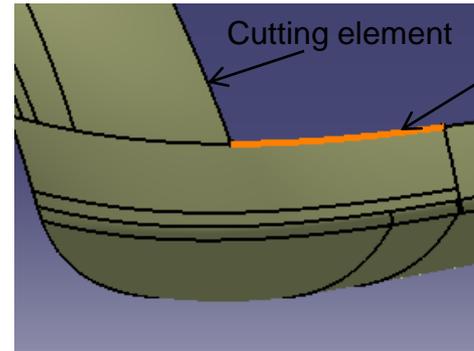
A- 67



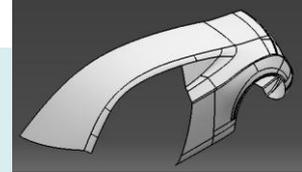


Tutorial 8D

- Create a split curve
- Create a blend surface (curvature continuous, tangent borders – none)
- Create a point on curve
- Create a point on curve
- Create a spline (on surface, tangent)
- Split surface by the spline
- Join surfaces
- Create a boundary curve
- Create a swept surface
 - Profile type = linear
 - Subtype = with reference surface
 - Angle = 45deg
 - Length = 30mm

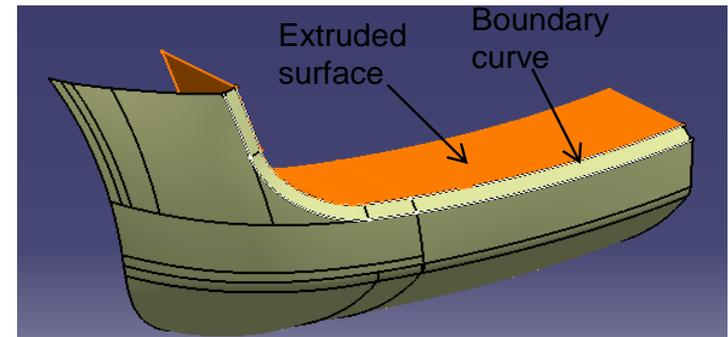


A- 68

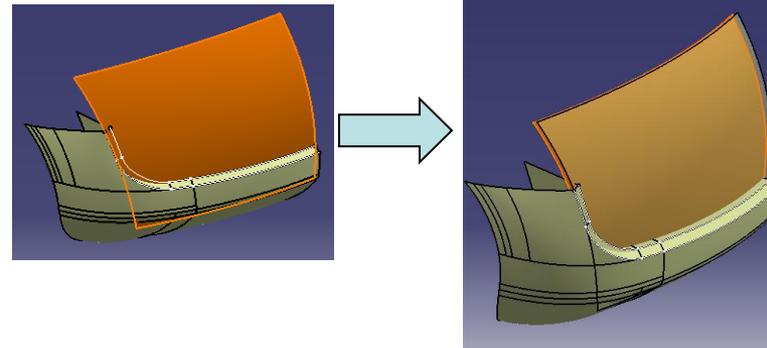


Tutorial 8D

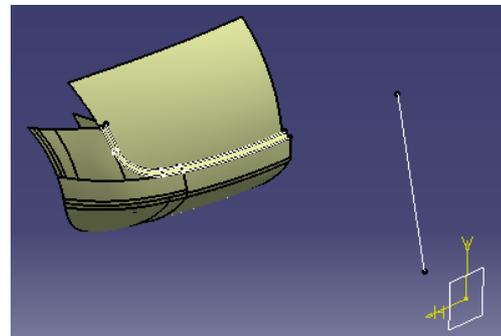
- Create another boundary curve
- Create an extruded surface (170mm, direction: Yz plane)



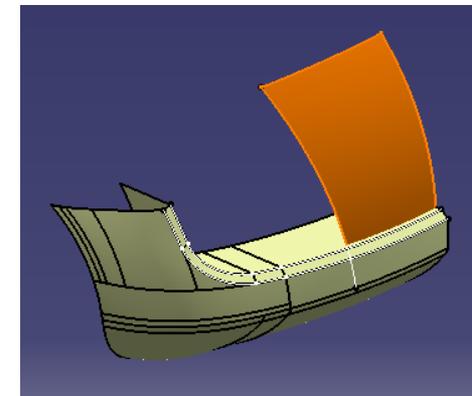
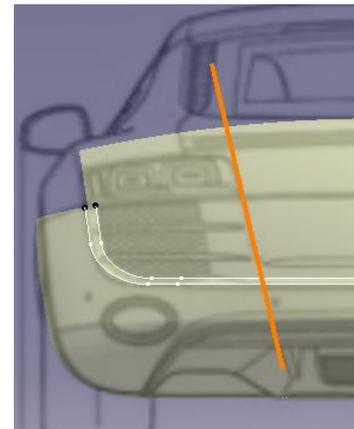
- Show the old split surface
- Create an offset surface (20mm inward)

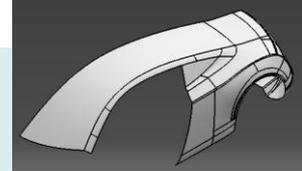


- Create a sketch on the back offset plane (Draw a line)
- Project sketch onto the offset surface
- Split surface



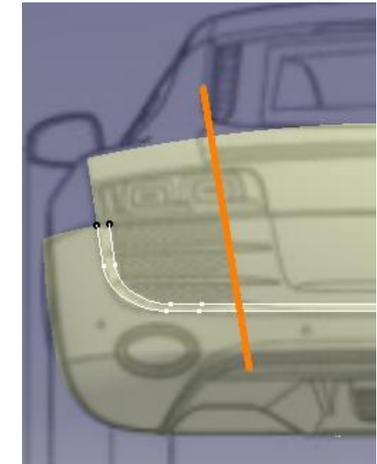
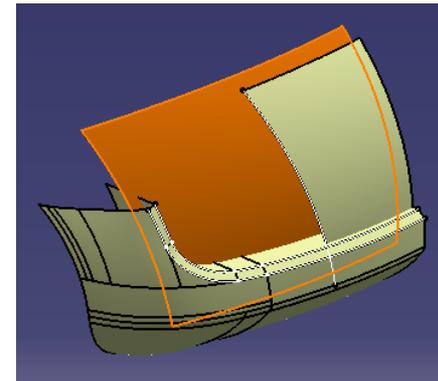
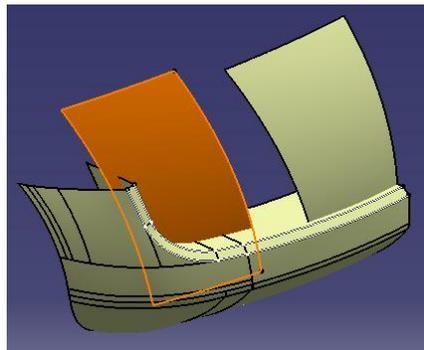
A- 69



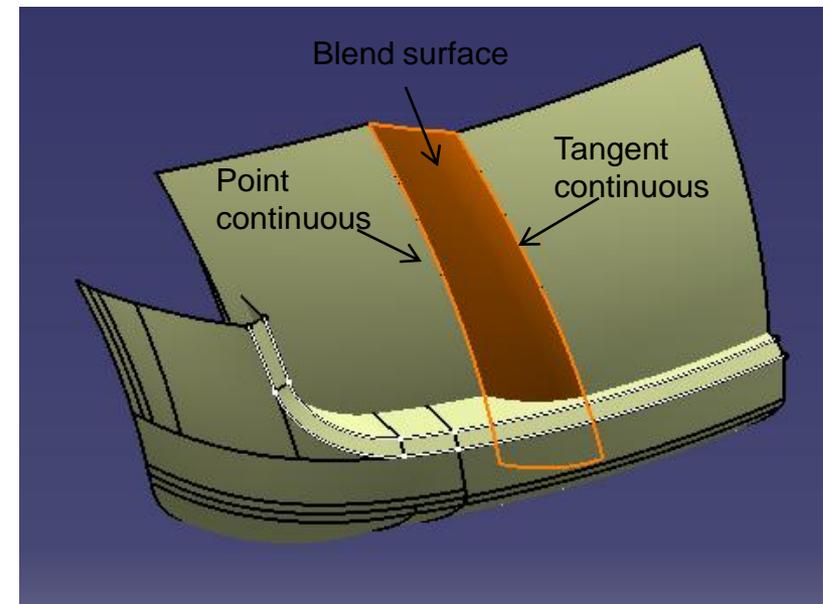


Tutorial 8D

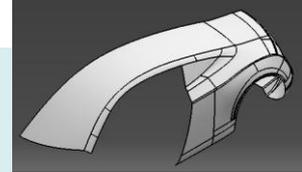
- Translate the Untrimmed offset surface (75mm inward)
- Create a sketch on the back offset plane (Draw a line)
- Project sketch onto the new surface
- Split surface



- Create a blend surface
 - Point continuous on one side, tangent continuous on other side
 - Trim support (Join them together)

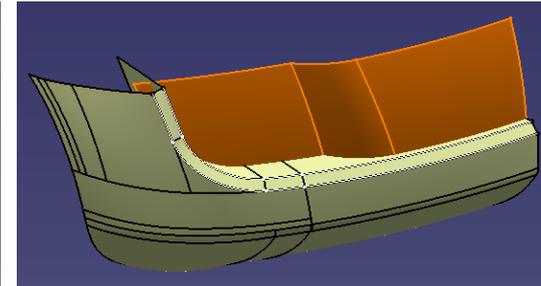
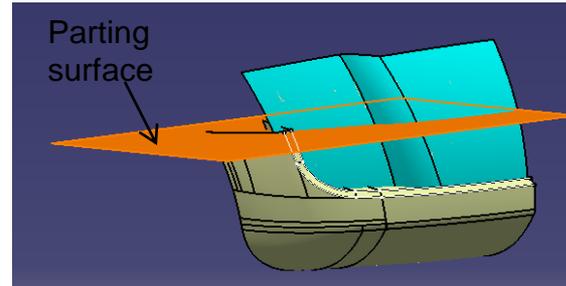


A- 70

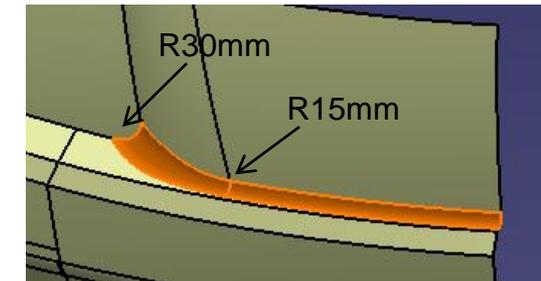
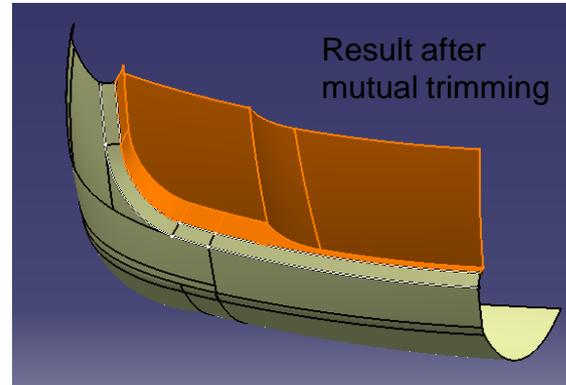


Tutorial 8D

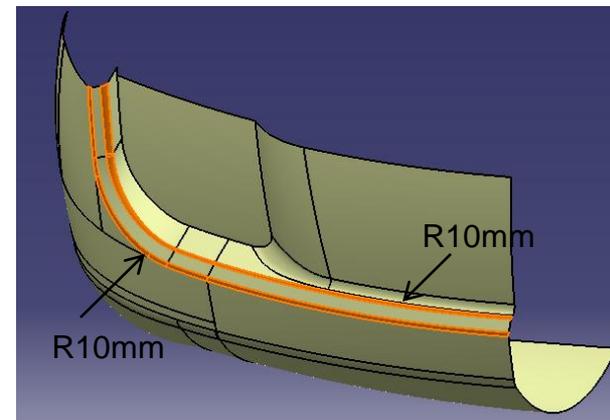
- Split surface by the old parting surface (which is in geometrical set “parting_surface”)



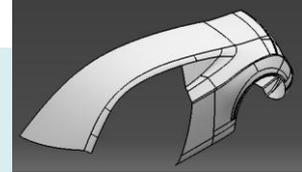
- Mutual trim surfaces



- Edge variable fillet (30mm, 15mm)
- Shape Fillet (Surface-surface 10mm)
- Shape Fillet (Surface-surface 10mm)

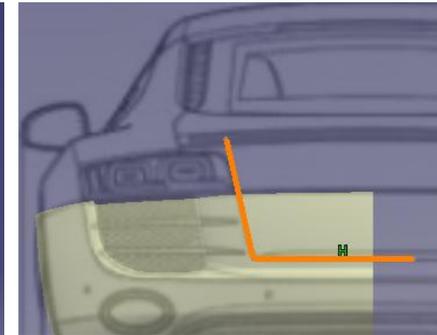
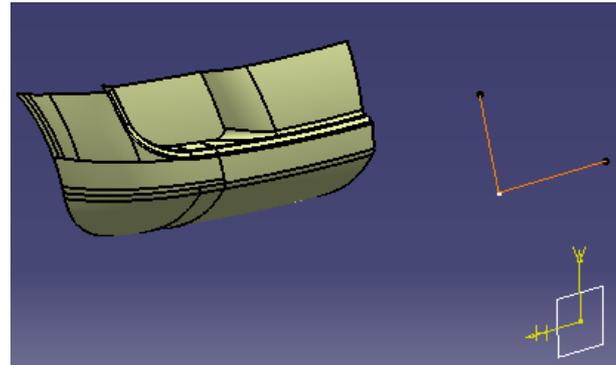
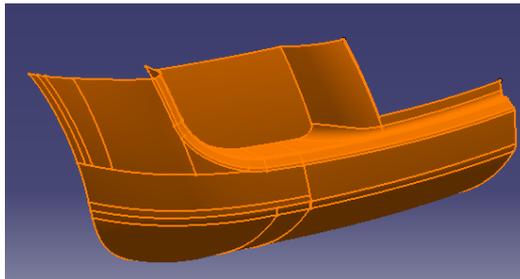


A- 71

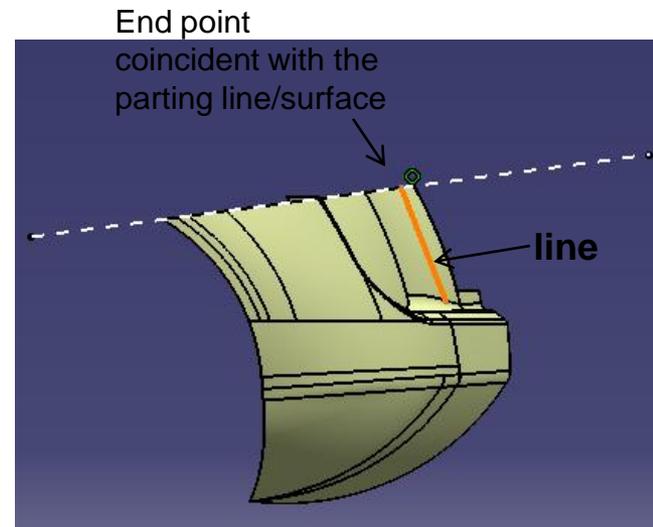
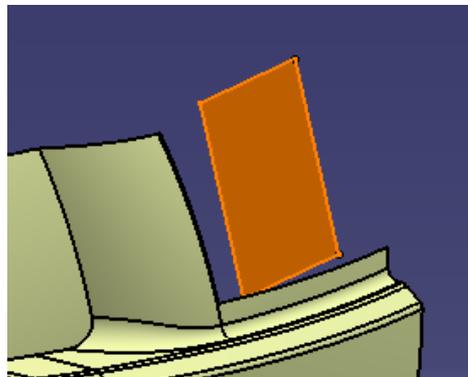


Tutorial 8D

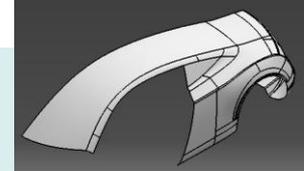
- Create a sketch on the back offset plane (Draw 2 lines)
- Project sketch
- Split surface by projected curve



- Create a sketch on XZ plane (Draw a line)
- Create an extruded surface (230mm)

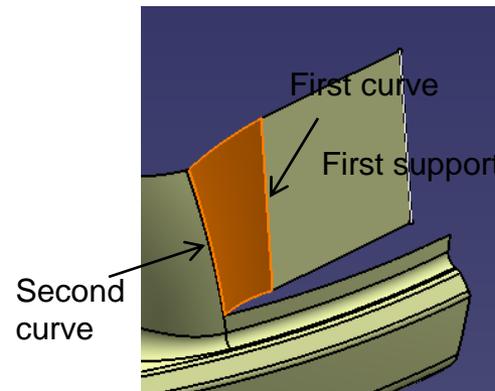


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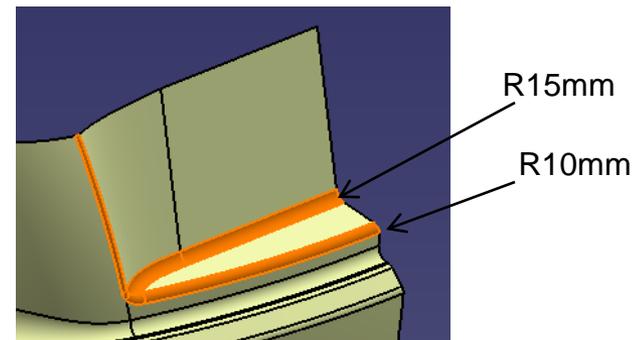
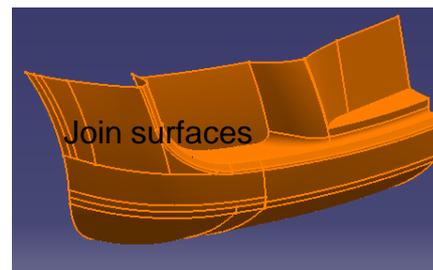
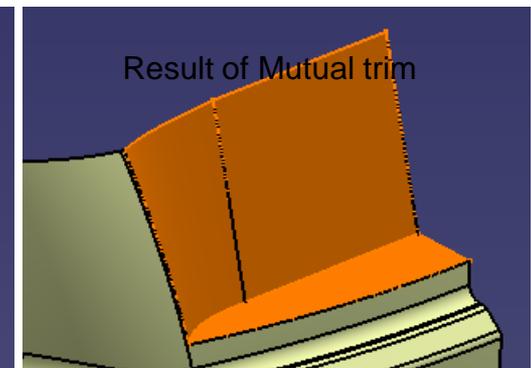
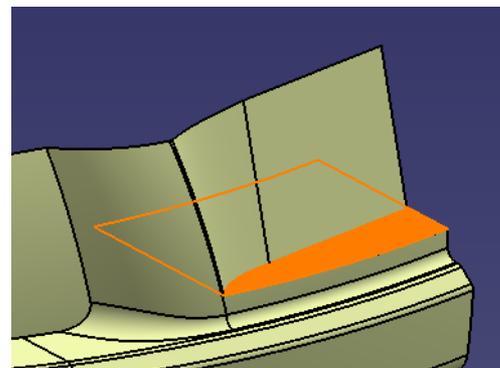


Tutorial 8D

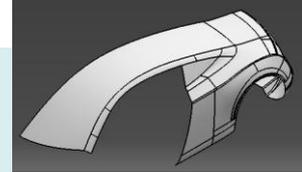
- Create a Blend surface
 - First curve, first support, Curvature continuous, "Trim support"
 - Second curve



- Create an extrude surface (230mm, Direction: Yz plane)
- Mutual trim surfaces
- Join surfaces
- Edge fillet 15mm
- Edge fillet 10mm

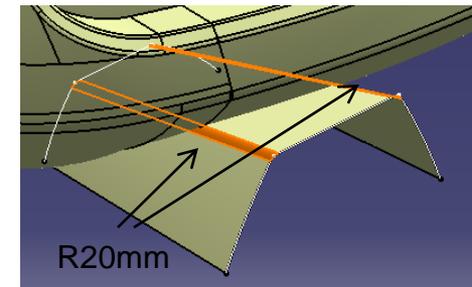
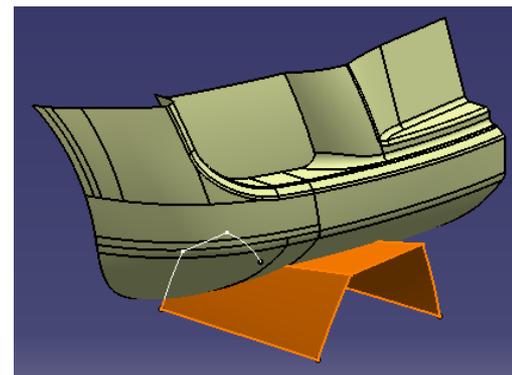
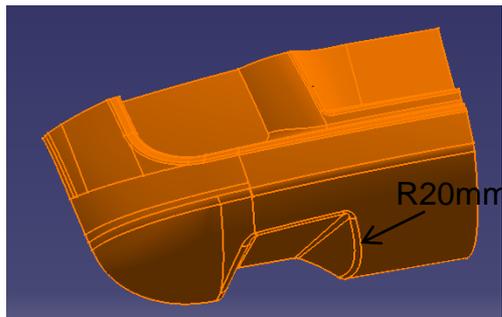
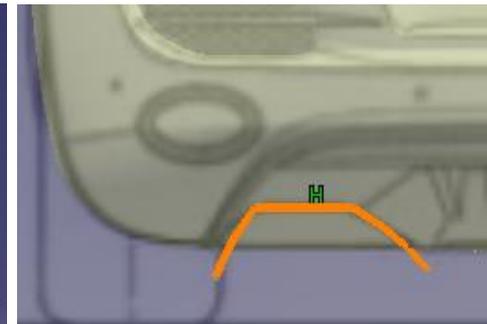
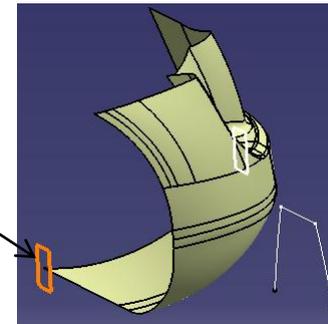
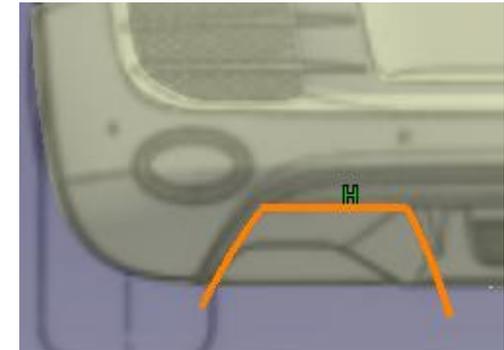
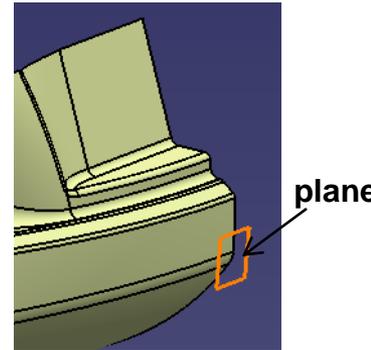


A- 73



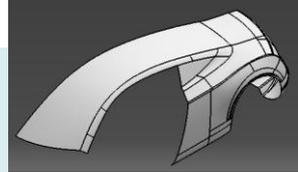
Tutorial 8D

- Create a plane at an endpoint
(Reference: YZ plane)
- Create a sketch on the plane
- Create another plane at an endpoint
(Reference: YZ plane)
- Create a sketch
- Create a multi-sections surface
(select “vertices coupling”)
- Create an edge fillet (20mm)
- Create a Shape fillet
(surface-surface 20mm)

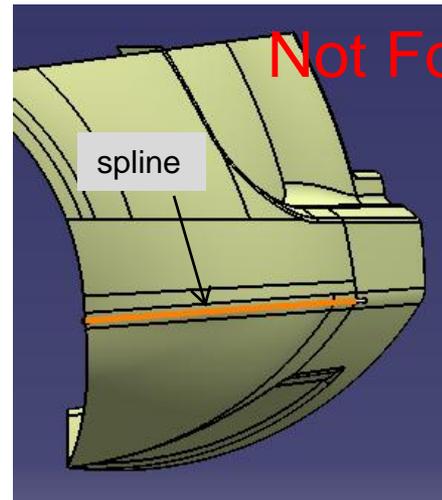


A- 74

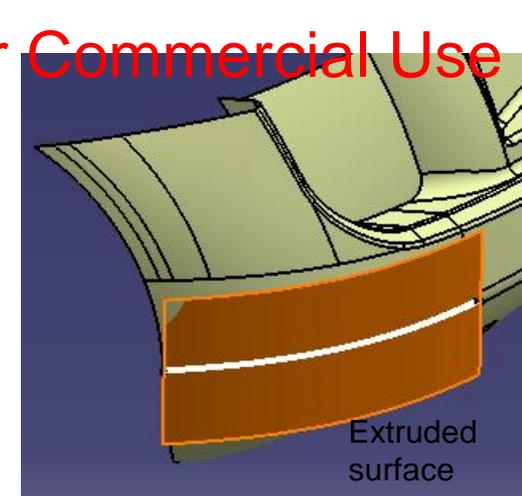
Tutorial 8D



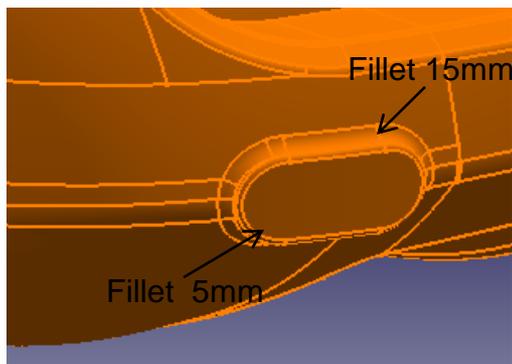
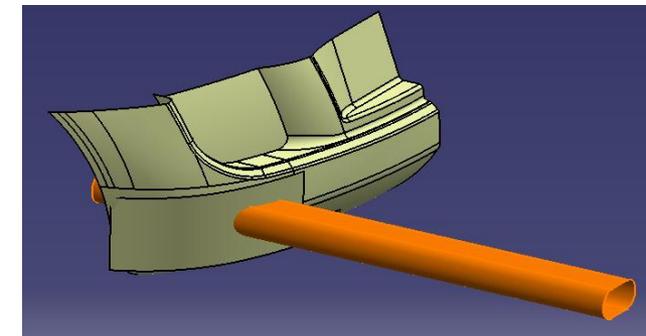
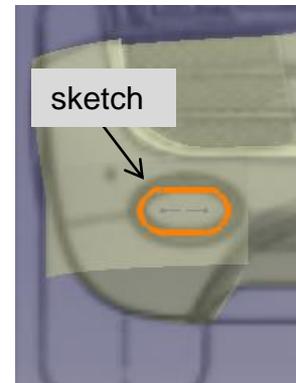
- Create a parallel curve
(Reference curve: 3d spline; Offset: 10mm)
- Create an extruded surface
 - Profile: the parallel curve
 - Direction: XY plane
 - Limit 1 = 100mm ; Limit 2 =100mm



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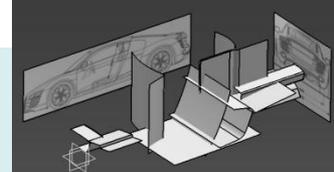
- Create a sketch on the back offset plane
- Extrude the sketch (1500mm)
- Create a Shape fillet (surface-surface, 5mm)
- Create a Shape fillet (surface-surface, 15mm)



A- 75

Parting Surfaces (master)

Tutorial 8D



**Right Click Geometrical set “parting_surface”,
select “Define in work object”**

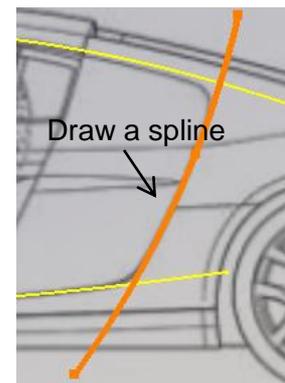
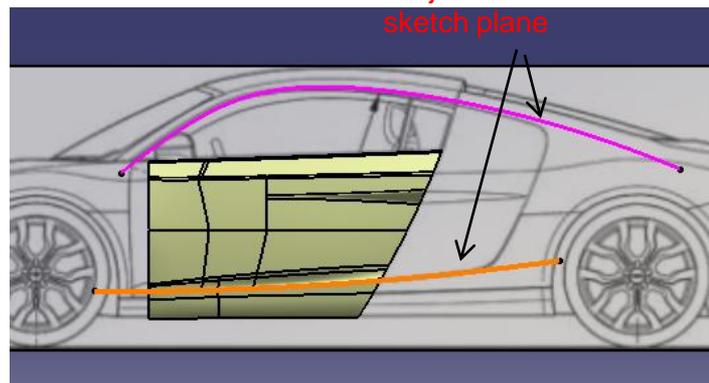
(Continue to make the rest...)

- Create a sketch on XZ plane
 - Project two 3d curve onto the plane
 - Project the old sketch onto the plane
 - Draw a spline
 - Create two fillets
 - Create a centreline, then quick-trim
- Create an extruded surface (1800mm)

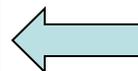
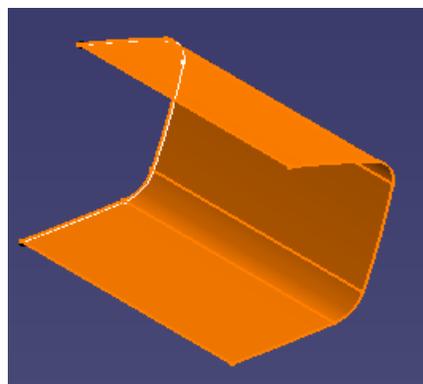
Up to now, there should have been four surfaces in the geometrical set “parting surface”



Project them onto sketch plane



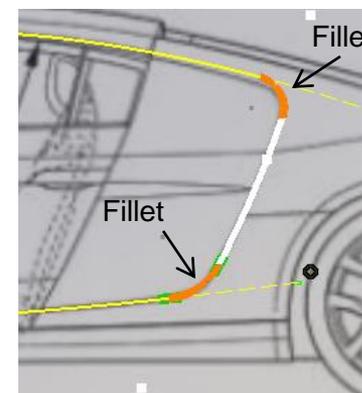
Draw a spline



A- 76



Quick trim by a centreline

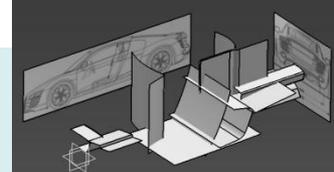


Fillet

Fillet

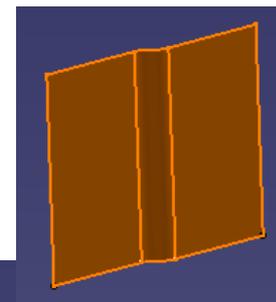
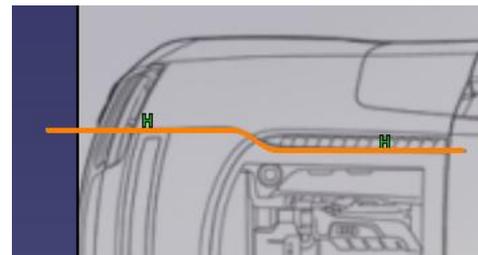
Parting Surfaces (master)

Tutorial 8D

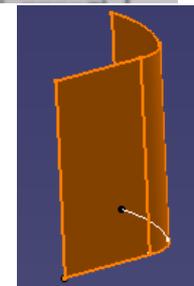
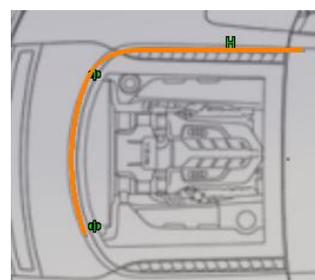


again

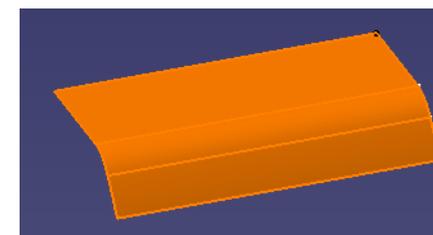
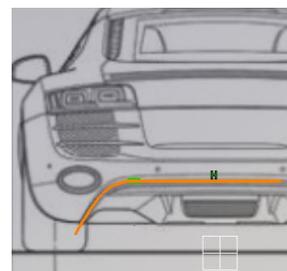
- Create a sketch on XY plane
- Create an extruded surface



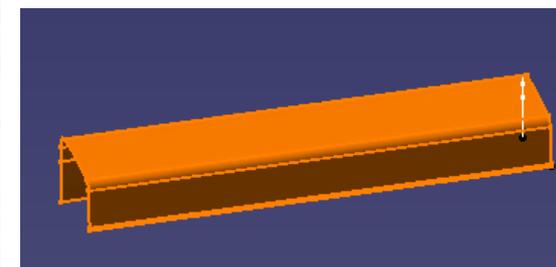
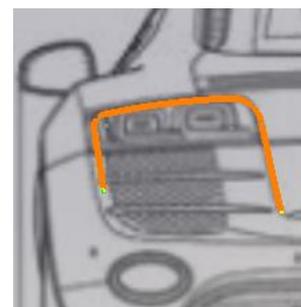
- Create a sketch on XY plane
- Create an extruded surface



- Create a sketch on the **offset plane at back**
- Create an extruded surface



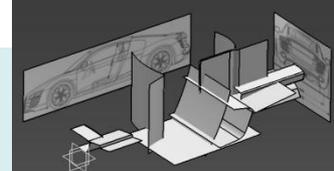
- Create a sketch on the **offset plane at back**
- Create an extruded surface



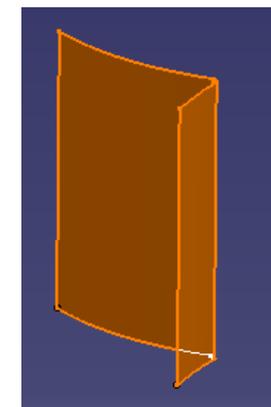
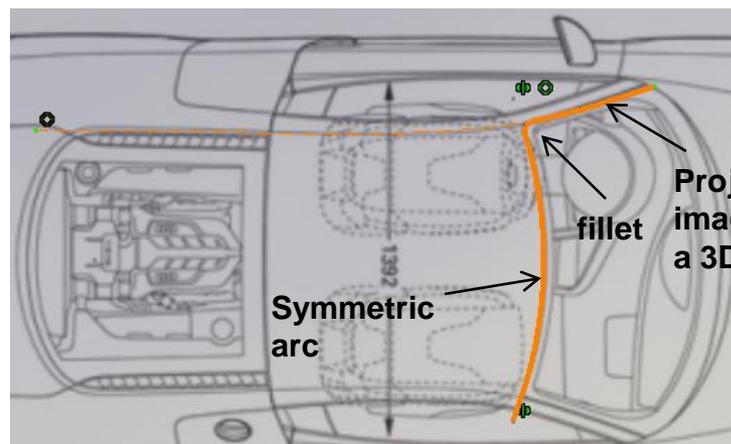
A- 77

Parting Surfaces (master)

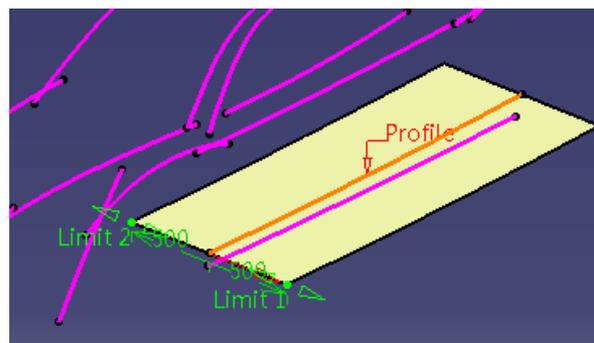
Tutorial 8D



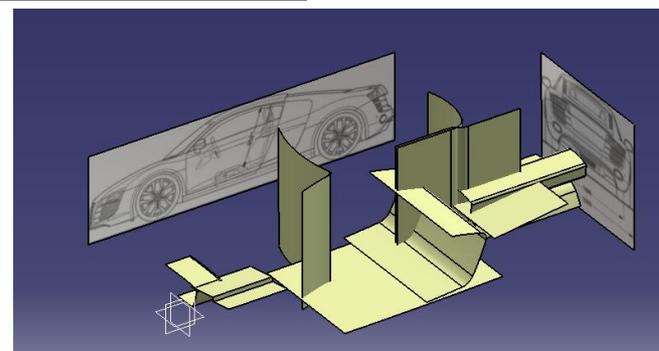
- Create a sketch on XY plane
- Create an extruded surface



- Create an extruded surface
 - Profile: 3d curve
 - Direction: XZ plane



- (There should be 10 parting surfaces in the geometrical set “parting_surface”)
- **Save file “R8_master_a.catpart”**



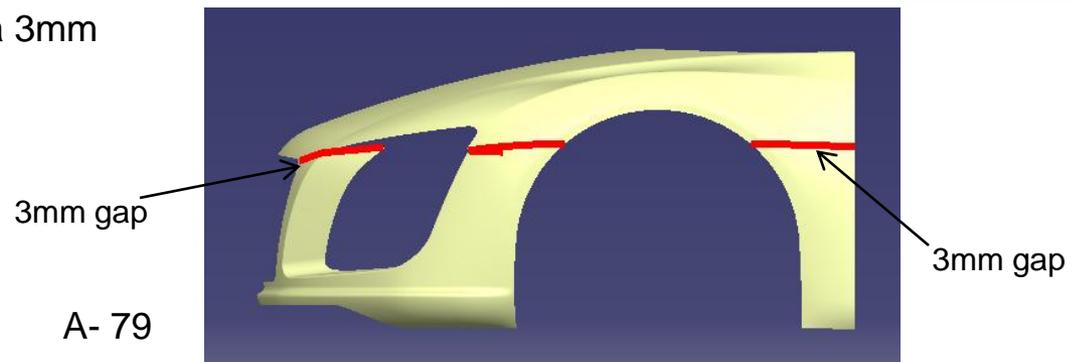
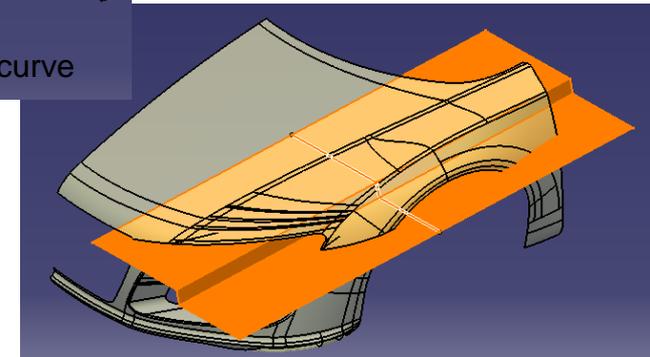
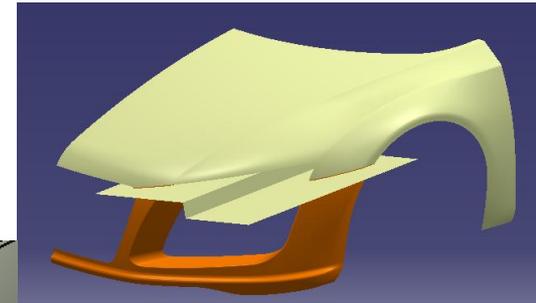
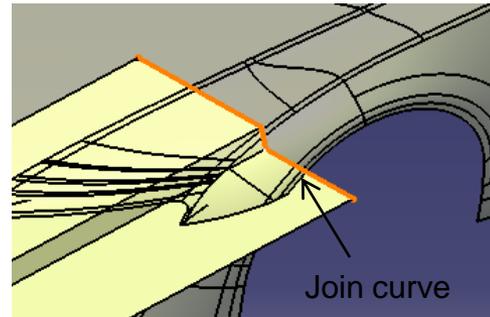
A- 78

R8_front body

Tutorial 8E



- **Start a new part file**
- Copy three surfaces from the master model (**Paste Special, “as result with link”**)
- Create a join curve (3 edges)
- Extrapolate the surface from the join curve (850mm)
- Create an offset surface (Surface: Extrapolated surface; Offset 3mm)
- Split surfaces (so that there can be a 3mm gap between two surfaces)

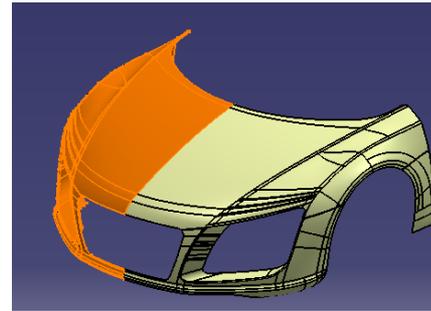




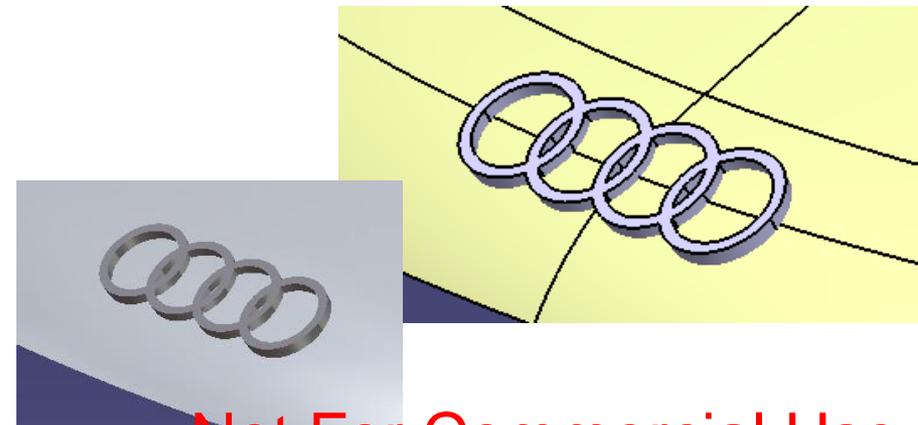
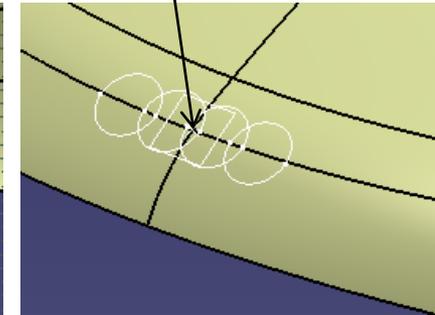
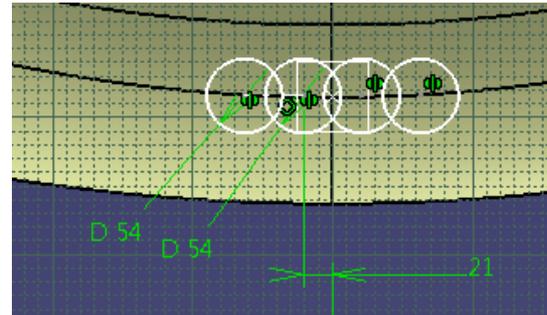
R8_front body

Tutorial 8E

- Multi-select three surfaces, then make symmetry
- Create a new geometrical set
- Create a point at endpoint of the edge 
- Create a plane (tangent to surface)
- Create a sketch (4 circles)
- Switch to “part design” workbench
- Create a pad (Limit 1= 5mm, Limit 2= 5mm, thickness 1,2 = 3mm)
- Apply material “Tungsten” to Part body
- Apply material “ Grey Blue” to geometrical set.1
- **Save File as “R8_frontbody_a.catpart”**



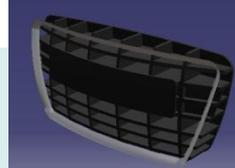
Make a point and then a plane here 



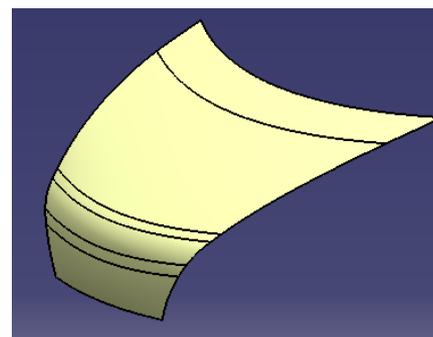
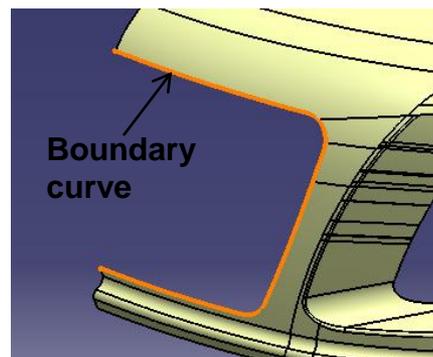
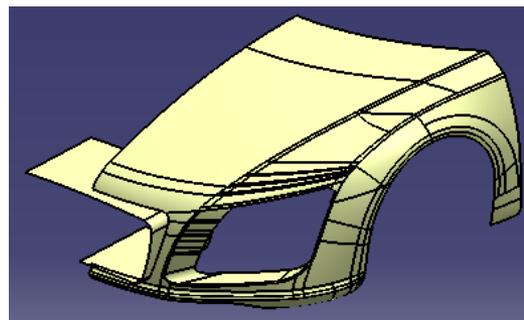
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R8_grille

Tutorial 8E

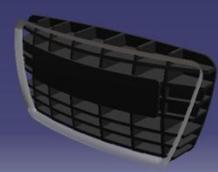


- **Start a new part file**
- Copy 3 surfaces from the master model
- **(Paste Special, “as result with link”)**
- Join 2 surfaces
- Create a boundary curve
- Copy the multi-sections surface from the master model
- **(Paste Special, “as result with link”)**
- **(the surface should be the first surface in the master model)**

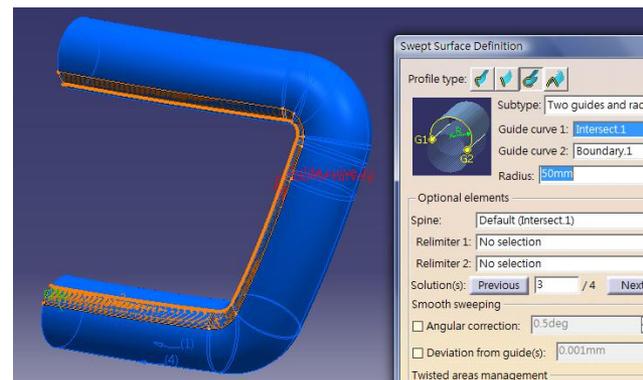
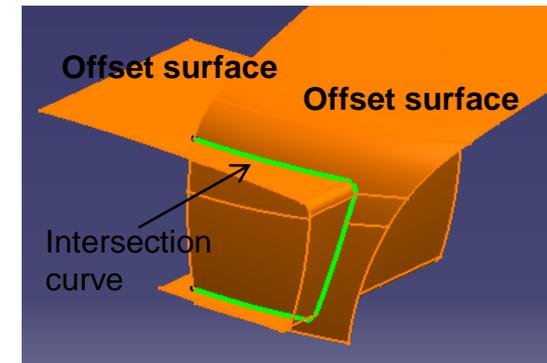
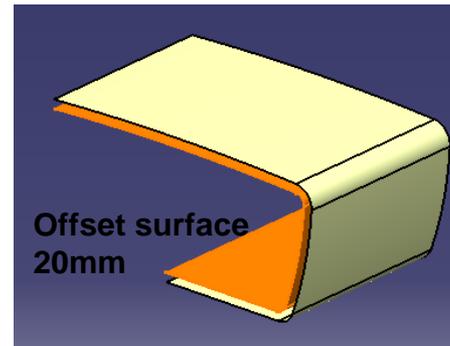
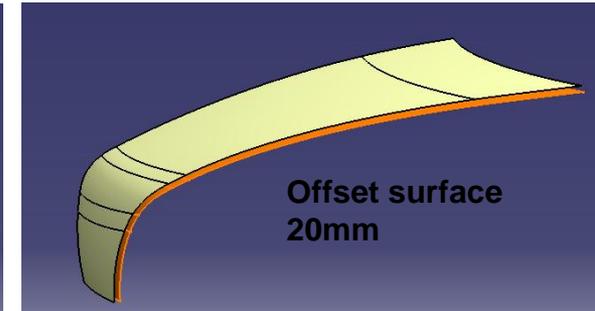
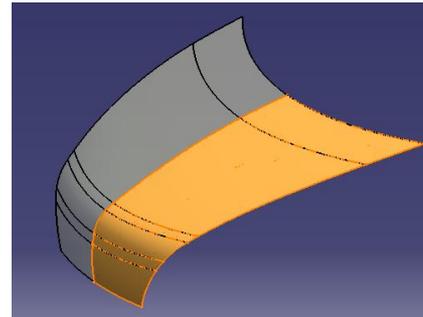


R8_grille

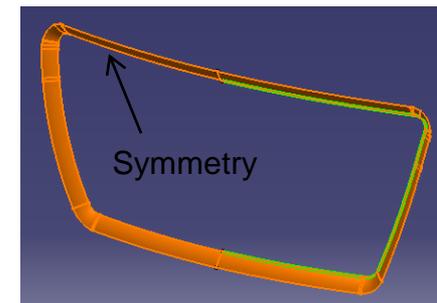
Tutorial 8E

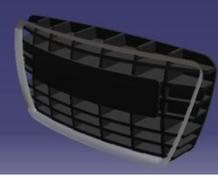


- Split the surface by right plane
- Create an Offset surface (20mm inward)
- Create another Offset surface (20mm inward)
- Create an intersection curve (between the above two offset surfaces)
- Create a swept surface
 - profile: circular
 - subtype: 2 guides & radius
 - radius: 50mm
- Create a symmetry surface



A- 82

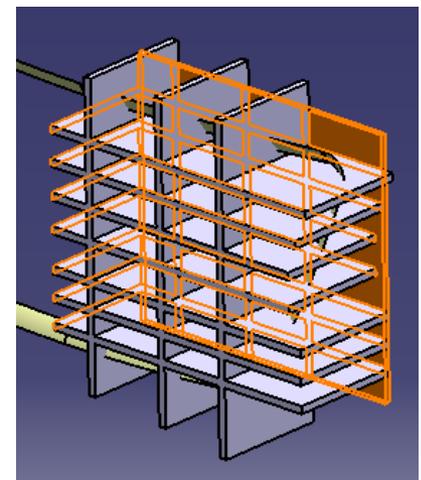
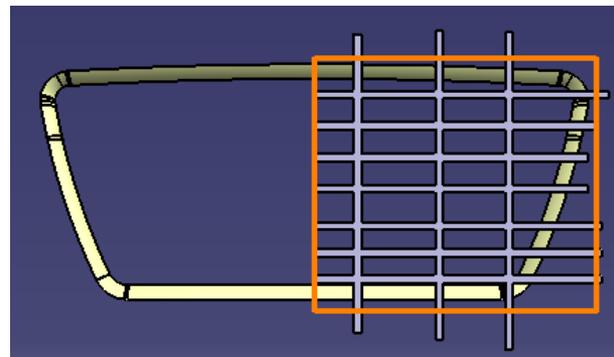
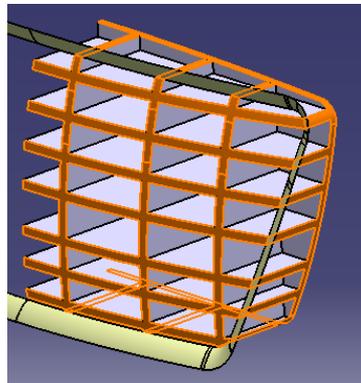
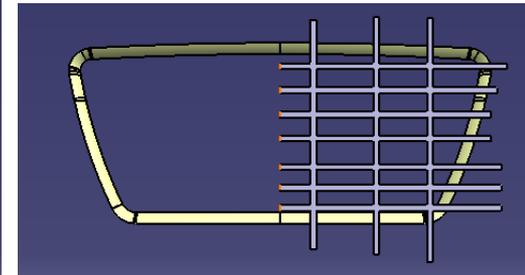
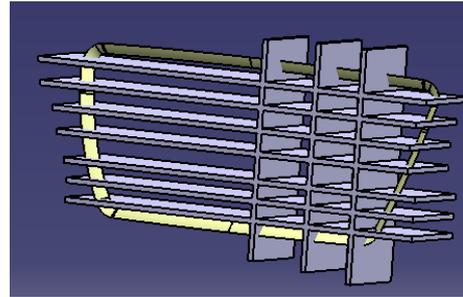
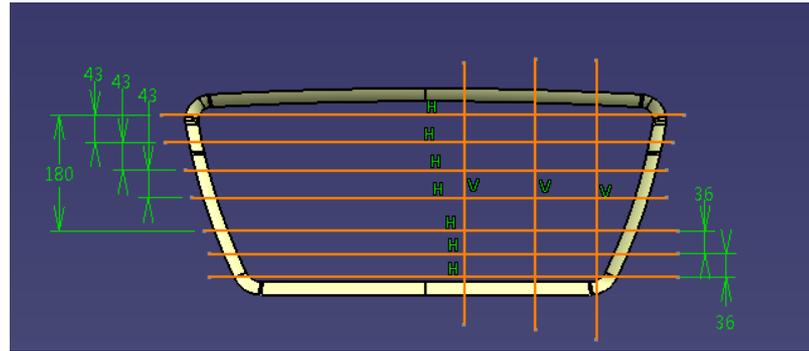




R8_grille

Tutorial 8E

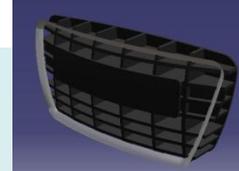
- Switch workbench to “part design”
- Create a sketch on YZ plane
(Draw a few lines as shown)
- Create a pad (150mm, thickness 1,2 = 5mm)
- Split the solid by XZ plane
- Create a sketch (a rectangle)
- Create a pad (5mm)
- Split solid by the two offset surfaces



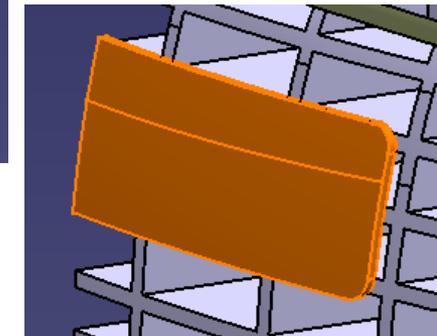
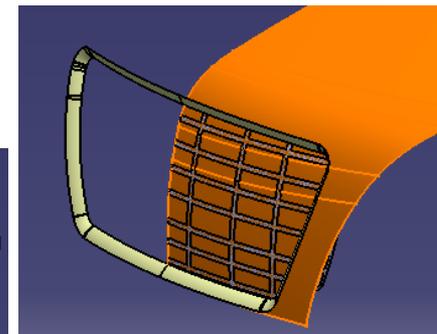
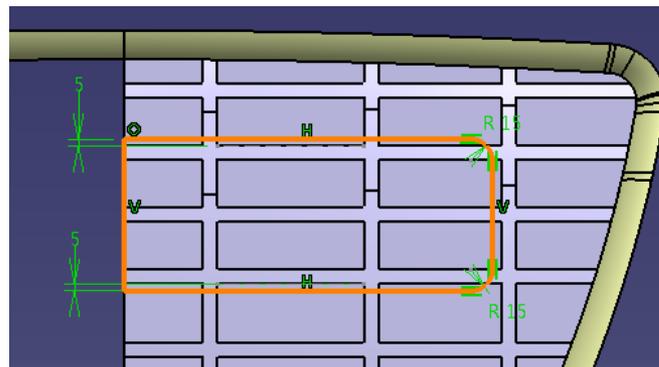
A- 83

R8_grille

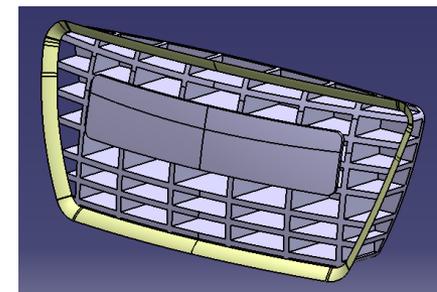
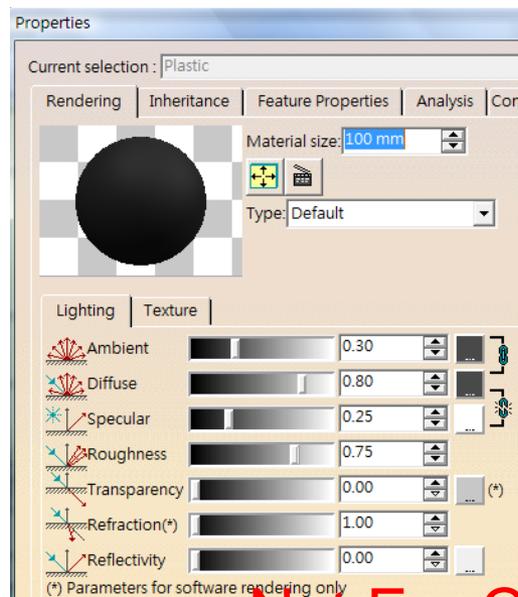
Tutorial 8E



- **Create a new body**
- Thick the offset surface (5mm thick, outward)
- Create a sketch on Yz plane
- Pocket (up to last)
- Add Body
- Mirror Body



- Apply material “Tungsten” to “geometrical set.1”
- Apply material “Plastic” to Partbody,
- Change parameters (as table) to Black
- **Save File as “R8_grille_a.catpart”**

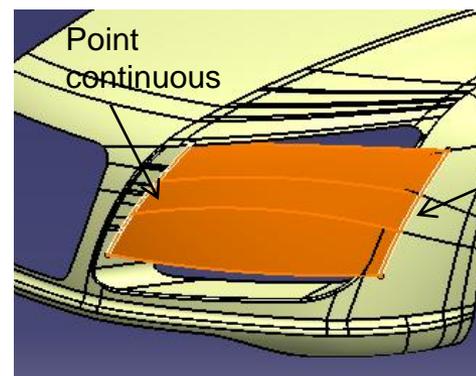
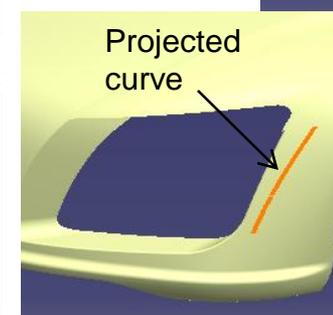
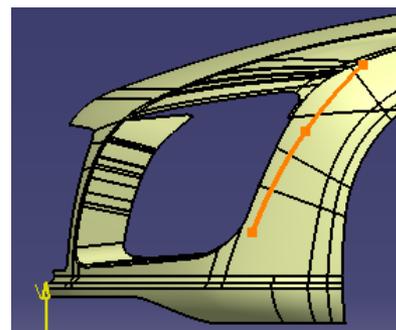
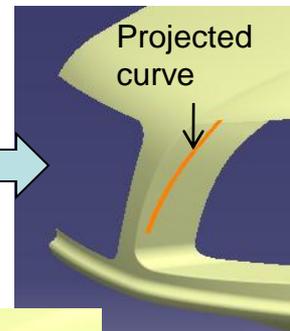
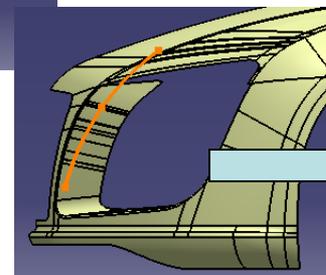
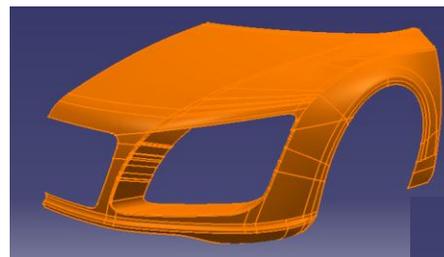


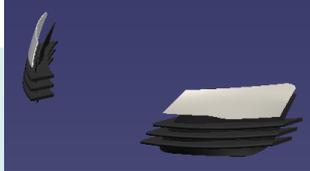


R8_head light

Tutorial 8E

- **Start a new part file**
- Copy two surfaces from the master model (**Paste Special, “as result with link”**)
- Create a sketch on XZ plane
- Project sketch on surface
- Create an offset plane (XZ plane, 1300mm)
- Create a sketch on the offset plane
- Project sketch on surface
- Create a blend surface (tangent continuous on one side, point continuous on other side)

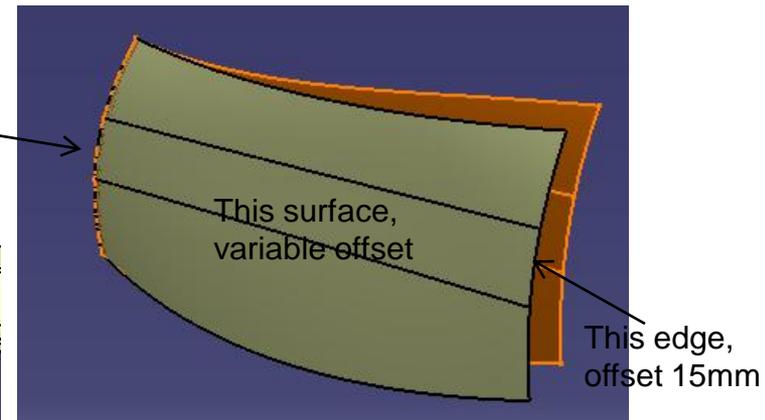
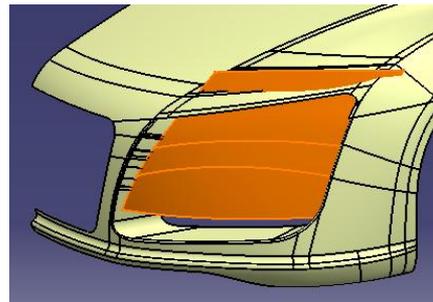




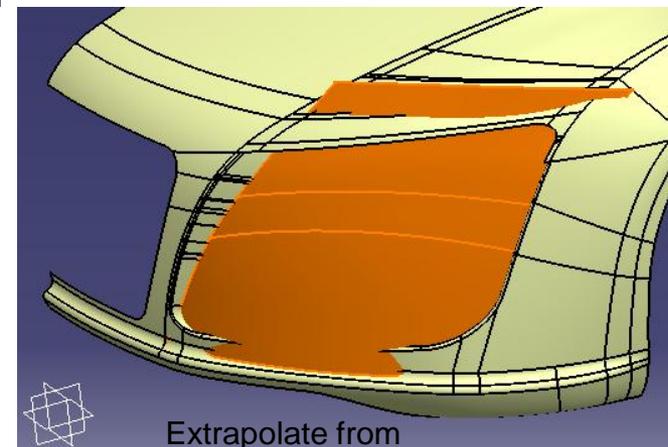
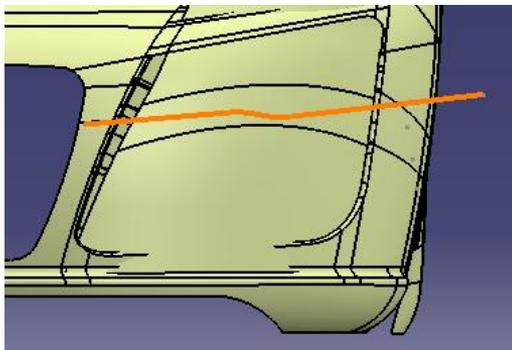
R8_head light

Tutorial 8E

- Create a variable offset (edge 0mm, edge 15mm, surface- variable)
- Extrapolate the offset surface (upper edge) (100mm, “assemble result”)



- Extrapolate the surface (lower edge) again (100mm, “assemble result”)
- Create a sketch on YZ plane



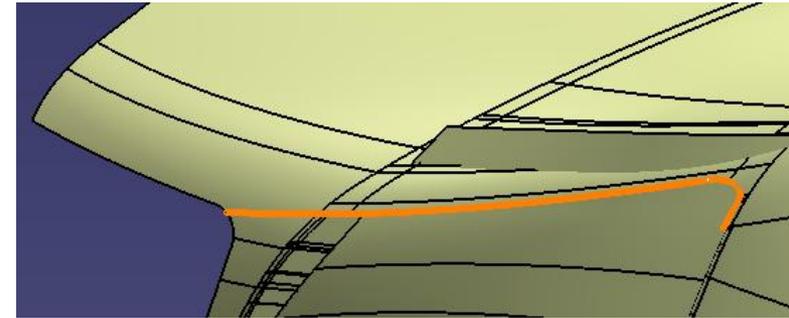
A- 86



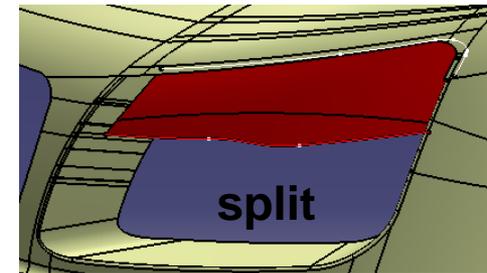
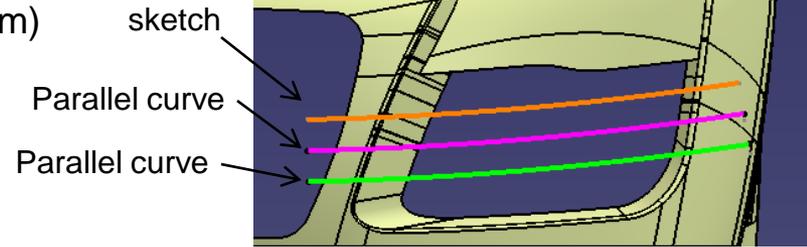
R8_head light

Tutorial 8E

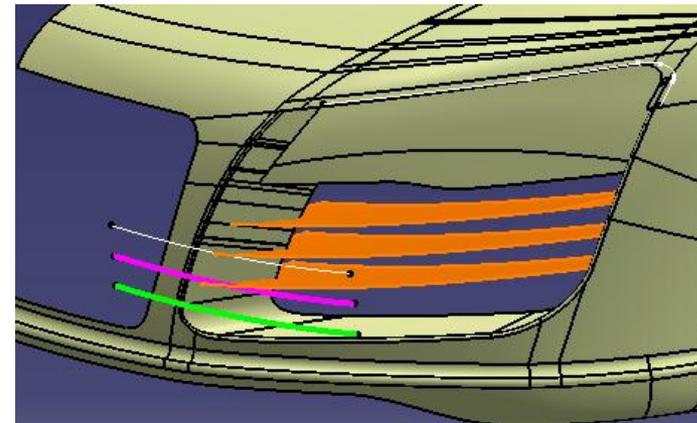
- Extract curve (from the surface edge)
- Project curve onto extrapolated surface
- Project sketch onto extrapolated surface
- Split surface



- Create a sketch on YZ plane
- Parallel curve (offset 43mm)
- Parallel curve (offset 43mm)



- Project curves (3 times)
- Create 3 extrude surfaces (Length 150mm)



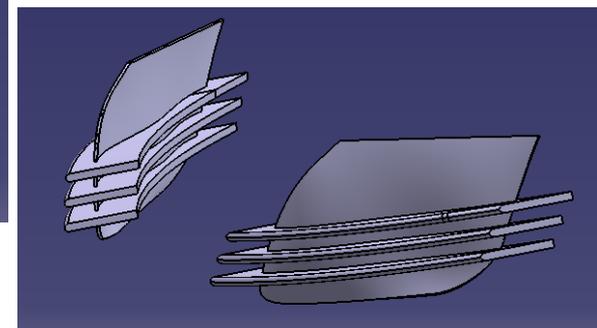
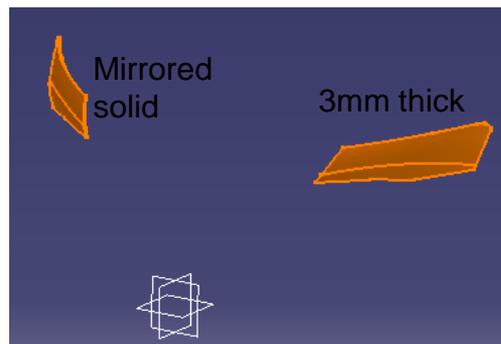
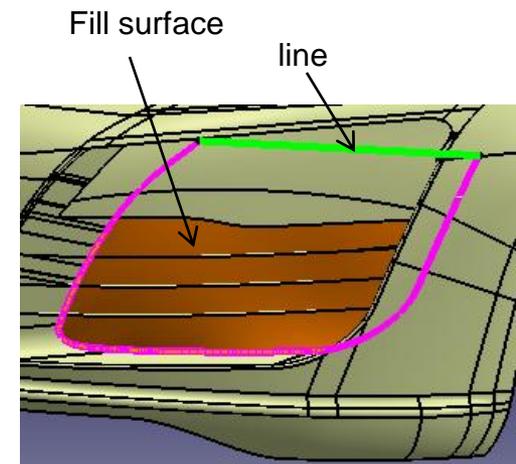
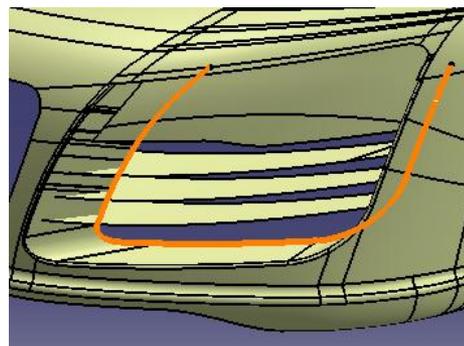
A- 87



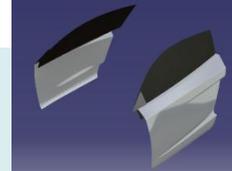
R8_head light

Tutorial 8E

- Create a boundary curve
- Create a line (from start point of boundary curve to endpoint of the curve)
- Create a fill surface
- Switch workbench to “Part Design”
- Thick surface (3mm)
- Mirror
- **Insert a new body**
- Thick surface (thickness1,2 =8mm)
- Thick surface (thickness1,2 =8mm)
- Thick surface (thickness1,2 =8mm)
- Thick surface (thickness = 3mm)
- Fillet R8mm
- Mirror
- Apply Material “White” to “Part Body”
- Apply Material “Plastic – black” to “Body.2”
- **Save File as “R8_headlight_a.catpart”**



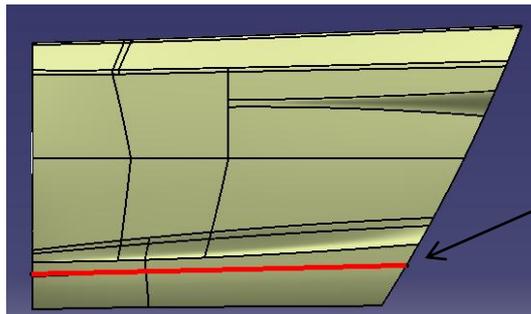
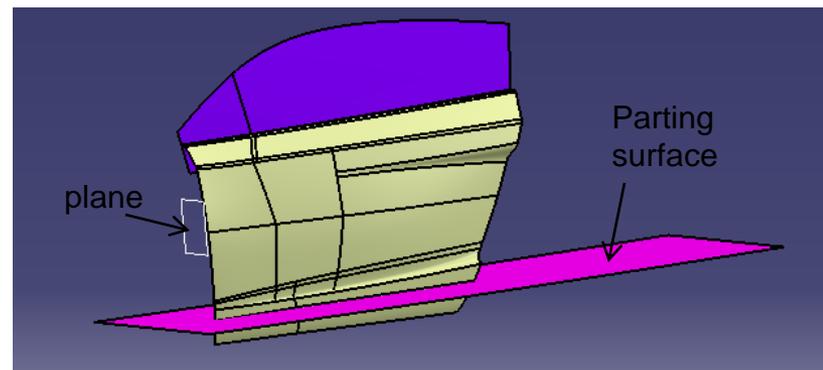
A- 88



R8_door

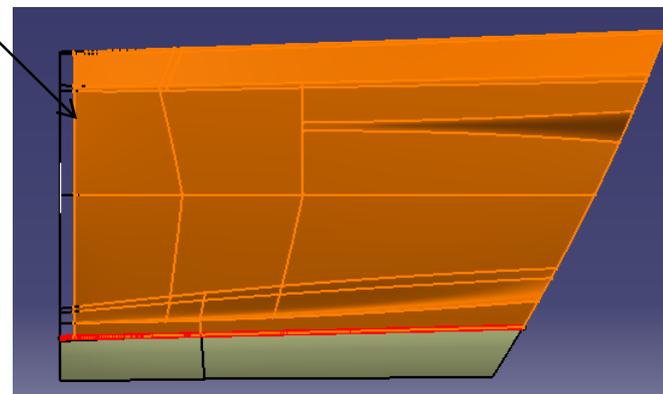
Tutorial 8E

- **Start a new part file**
- Copy 3 surfaces & a plane from the master model (**Paste Special, “as result with link”**)
- Create an Offset surface (3mm, parting surface)
- Split surface (by the offset surface)



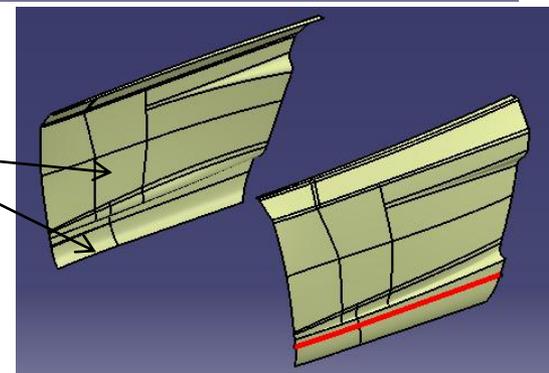
3mm gap

Split by 3mm offset plane

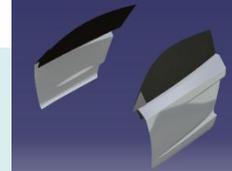


- Offset plane (3mm, backward)
- Split surface (by offset plane)
- Multi-select the two split surfaces, then Create symmetry

symmetry



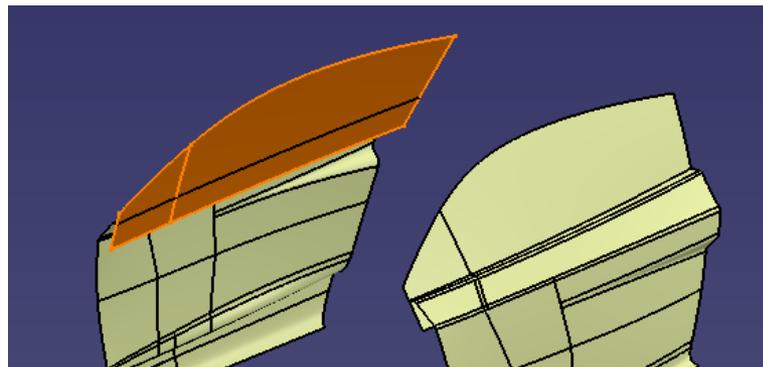
A- 89



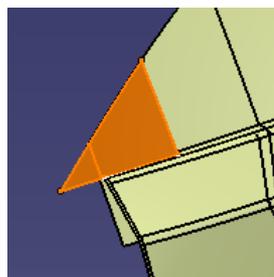
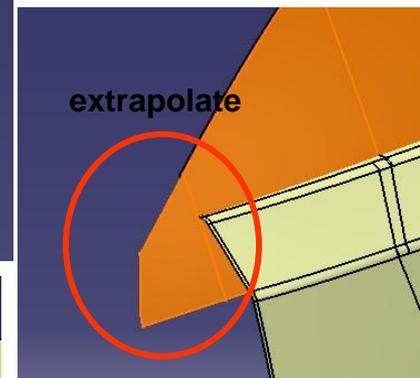
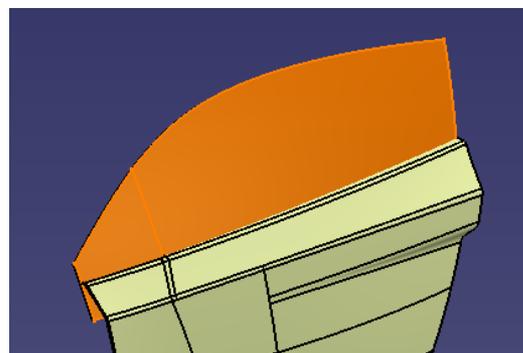
R8_door

Tutorial 8E

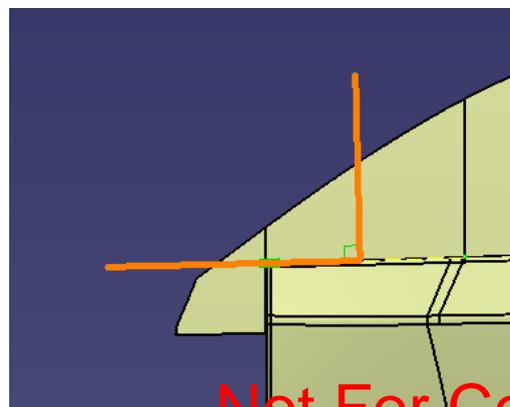
- **Insert a new geometrical set**
- Create symmetry of the surface (window)



- **Insert a new geometrical set**
- Offset surface (10mm, outward)
- Extrapolate the offset surface (~120mm)
- Create a sketch on XZ plane (Draw two lines)
- Project the curve on the extrapolated surface
- Split surface
- Create symmetry



A- 90

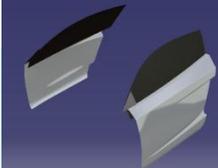


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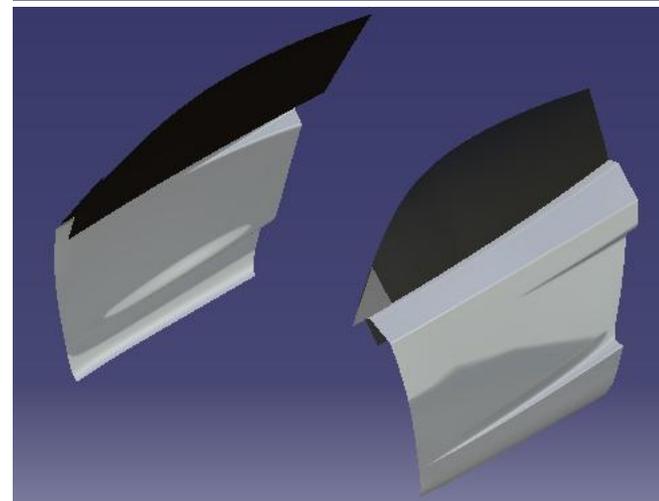
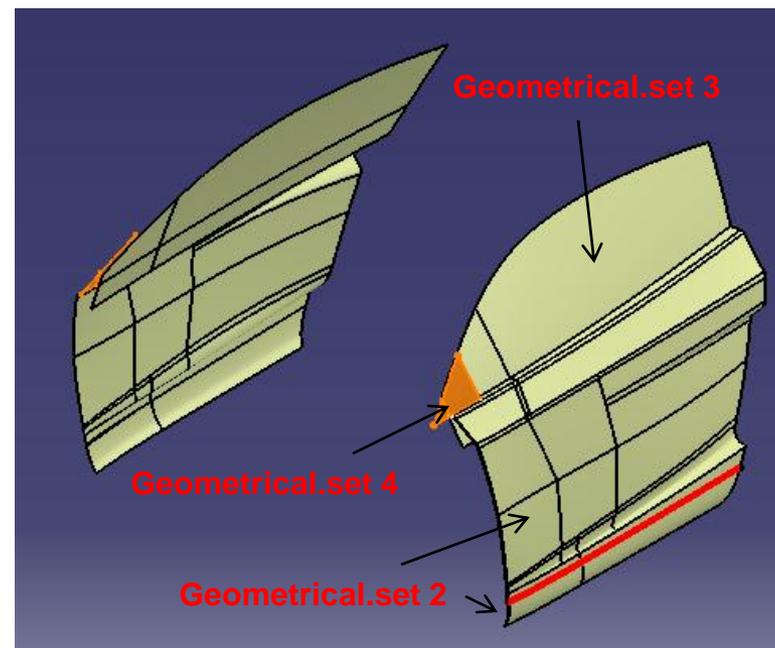
Written by Dickson Sham

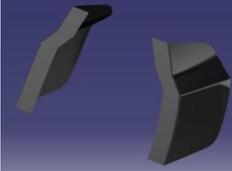
R8_door

Tutorial 8E



- Apply material “Grey blue” to geometrical.set.2
- Apply material “Black” to geometrical.set.3
- Apply material “DS Black” to geometrical.set.4
- **Save File as “R8_door_a.catpart”**

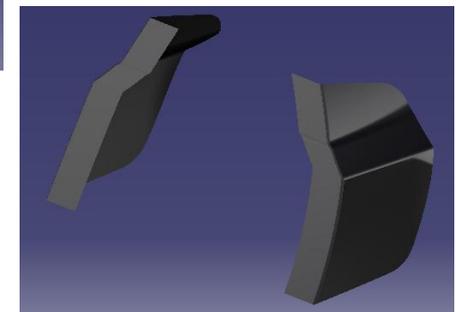
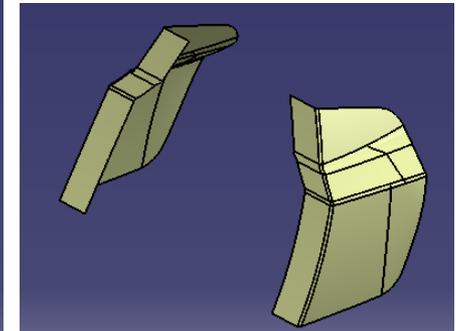
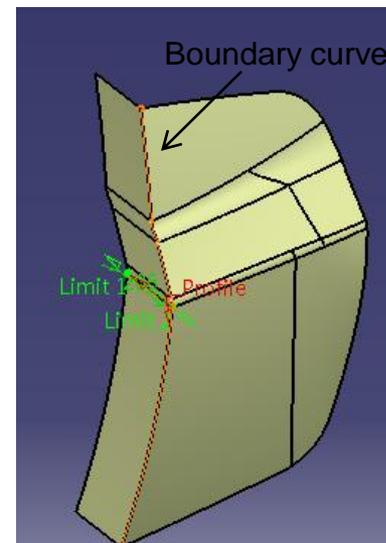
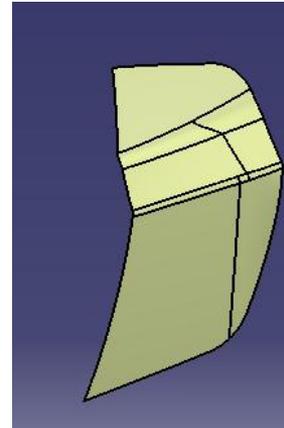
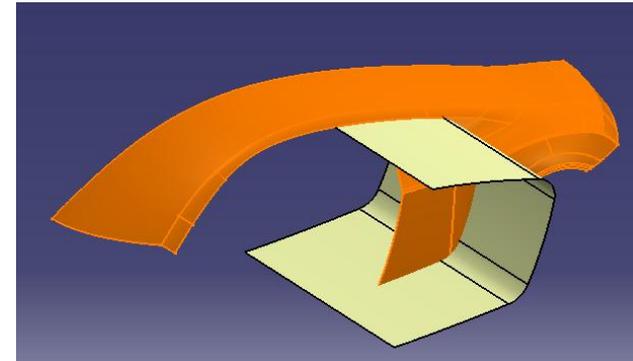


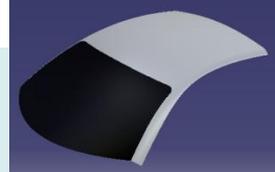


R8_side cover

Tutorial 8E

- **Start a new part file**
- Copy two surfaces from the master model (**Paste Special, “as result with link”**)
- Split surface
- Create a boundary curve
- Create an extruded surface (200mm)
- Create Shape fillet (R10mm)
- Create a symmetry surface
- Apply material “DS black” to geometrical.set.2
- **Save File as “R8_sidecover_a.catpart”**

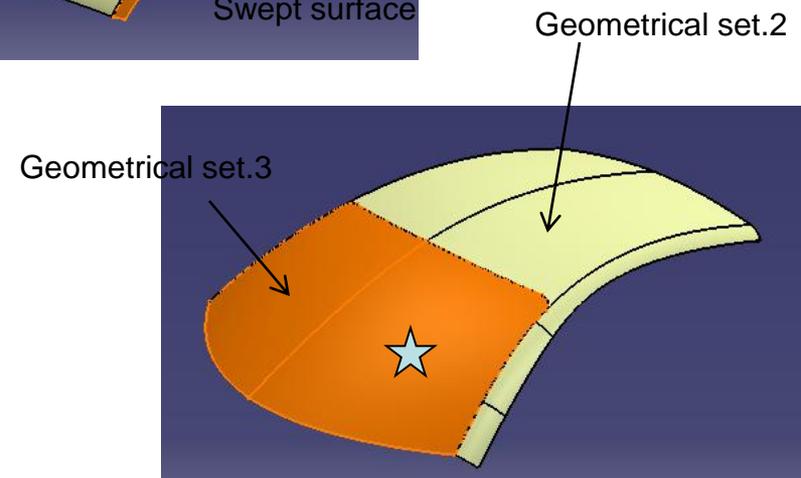
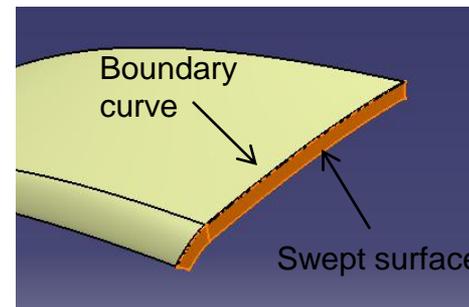
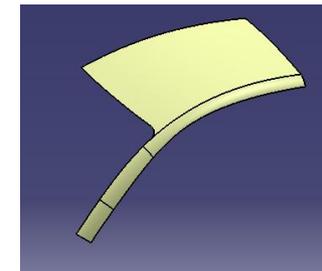
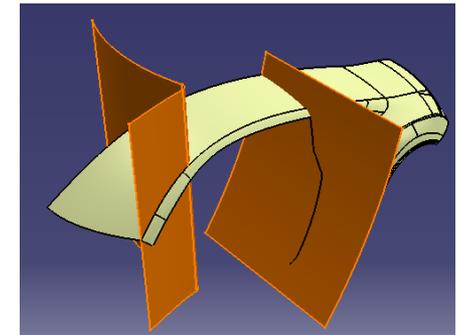
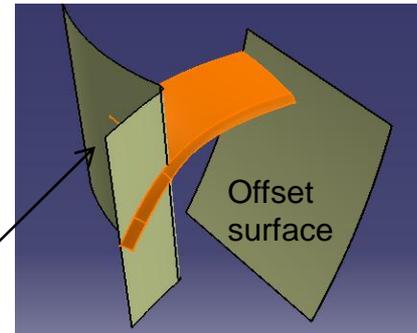




R8_top cover

Tutorial 8E

- **Start a new part file**
- Copy three surfaces from the master model (**Paste Special, “as result with link”**)
- Create an offset surface (3mm, forward)
- Split surface by the offset surface
- Split surface by the front parting surface
- Create a boundary curve
- Create a swept surface (90deg, 30mm)
- Create symmetry surfaces
- **Insert a new geometrical set**
- Split surface ★
- Create symmetry
- Apply material “Grey blue” to geometrical set.2
- Apply material “Black” to geometrical set.3
- **Save File as “R8_topcover_a.catpart”**



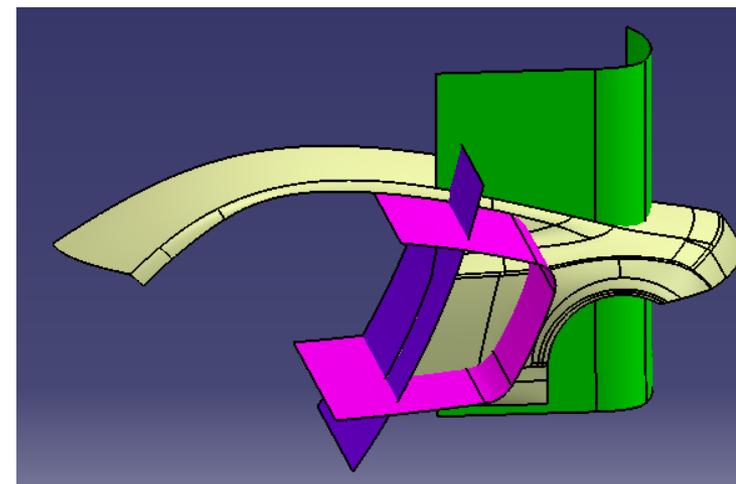
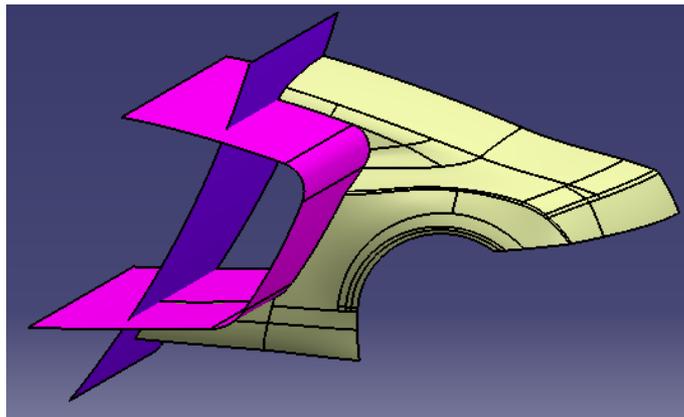
A- 93



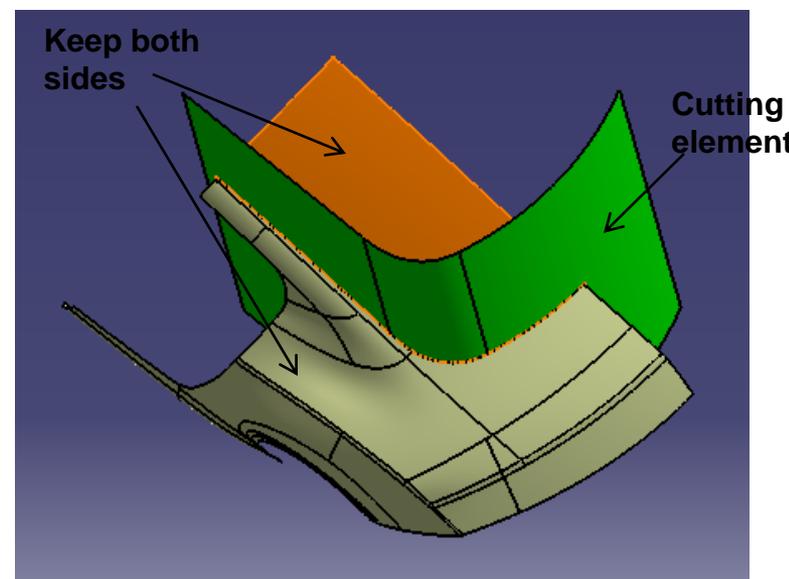
R8_rear cover

Tutorial 8E

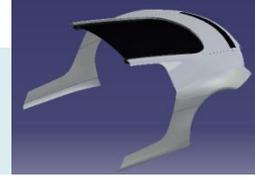
- Start a new part file
- Copy four surfaces from the master model
(Paste Special, “as result with link”)
- Split surface



- Split surface into **2 (Keep both sides)**



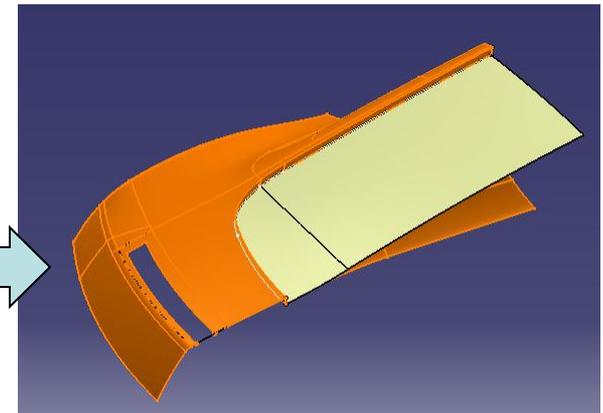
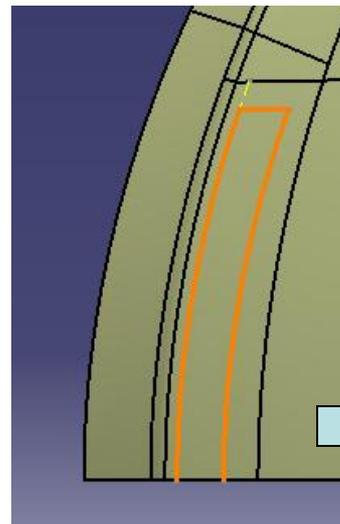
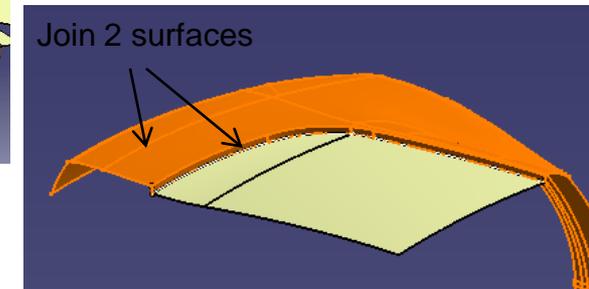
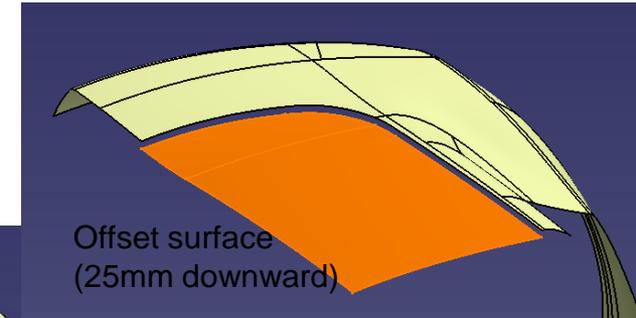
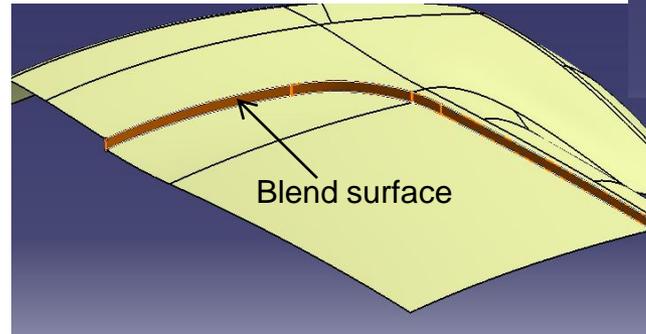
A- 94



R8_rear cover

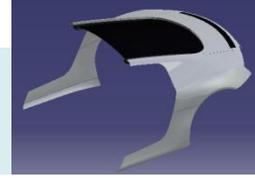
Tutorial 8E

- Create an Offset surface (25mm, downward)
- Create a boundary curve
- Create a boundary curve
- Create a Blend surface
- Join 2 surfaces
- Create a sketch on xy plane
- Project sketch onto the join surface
- Split surface



A- 95

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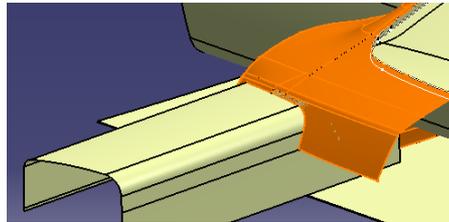


R8_rear cover

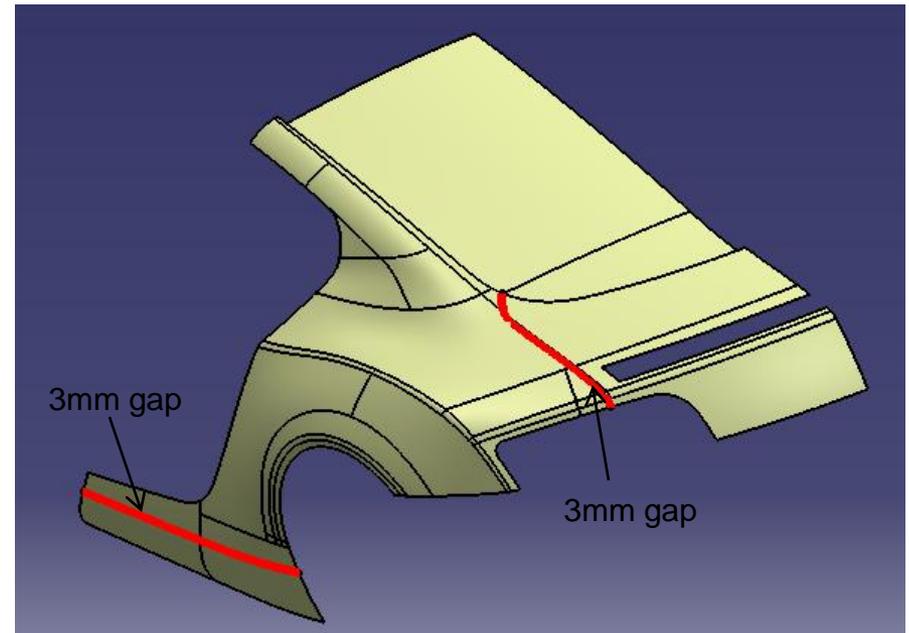
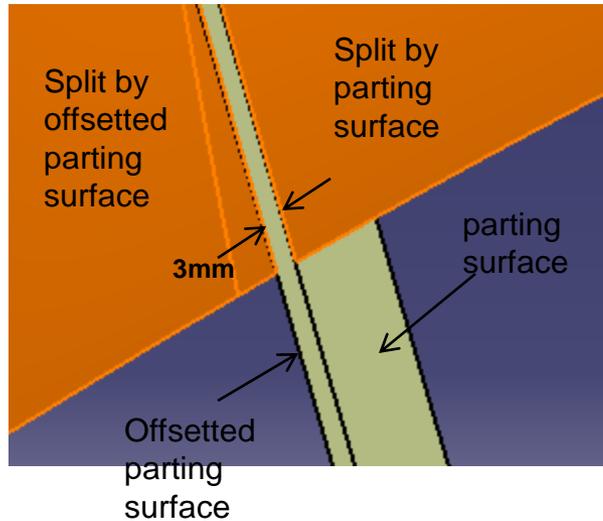
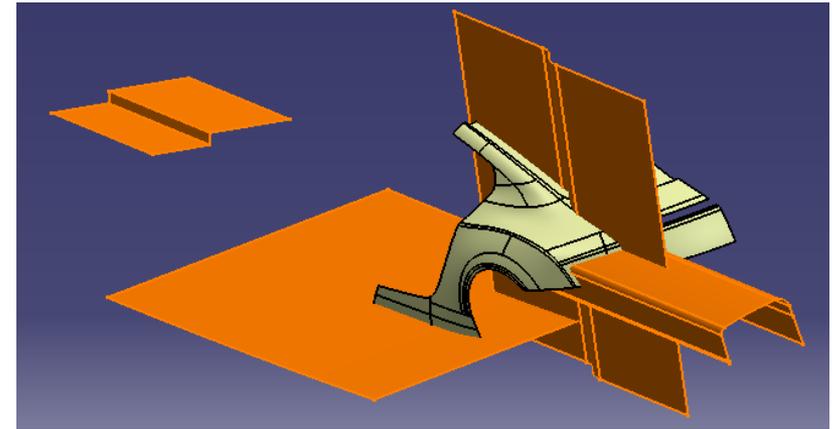
Tutorial 8E

- Copy another four surfaces from the master model
(Paste Special, “as result with link”)

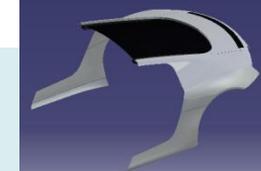
- Split surface



- Create Offset surfaces (3mm)
- Split surfaces (so that there can be a 3mm gap between 2 surfaces)



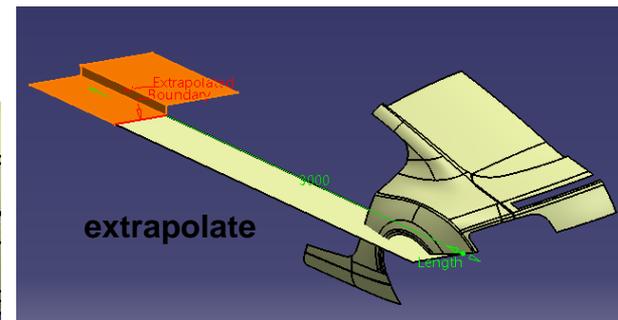
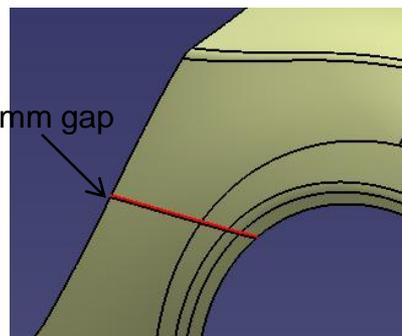
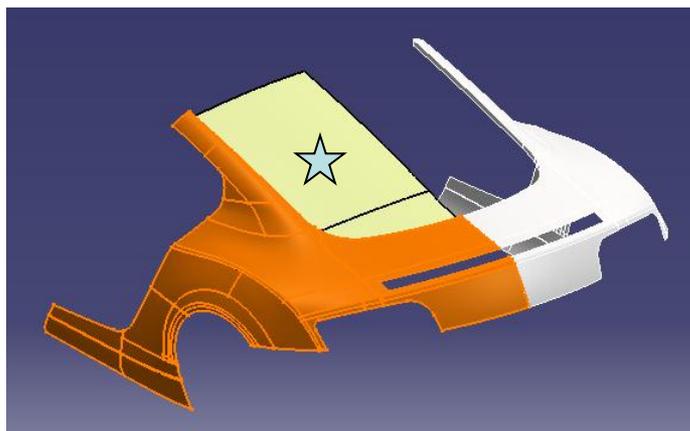
A- 96



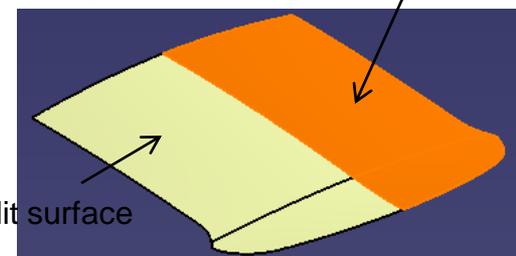
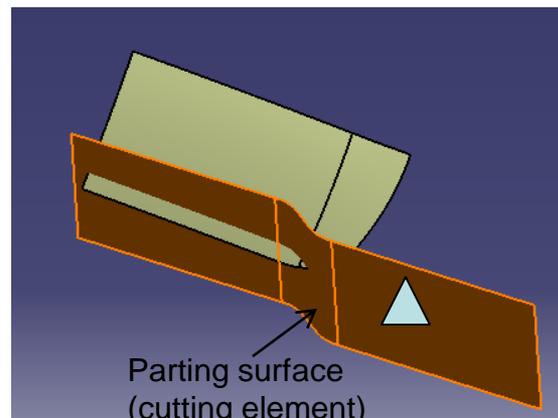
R8_rear cover

Tutorial 8E

- Extrapolate the parting surface (3000mm)
- Create an Offset surface (3mm)
- Split surfaces
- Create symmetry surfaces (except the translated surface)



- **Insert a New Geometrical set**
- Right-click the offset surface , select “Change geometrical set...”, select the new one
- Split the surface by a parting surface 
- **Create a symmetry surface**



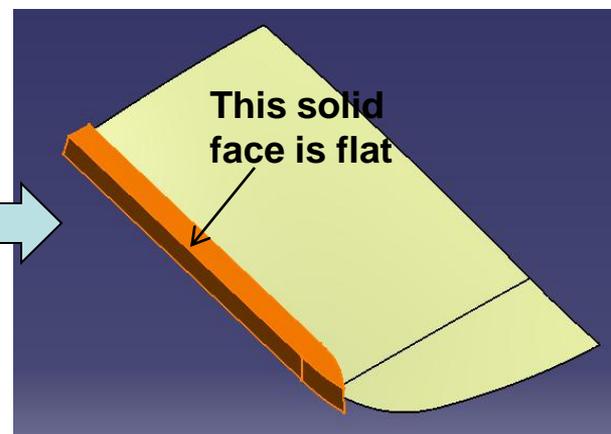
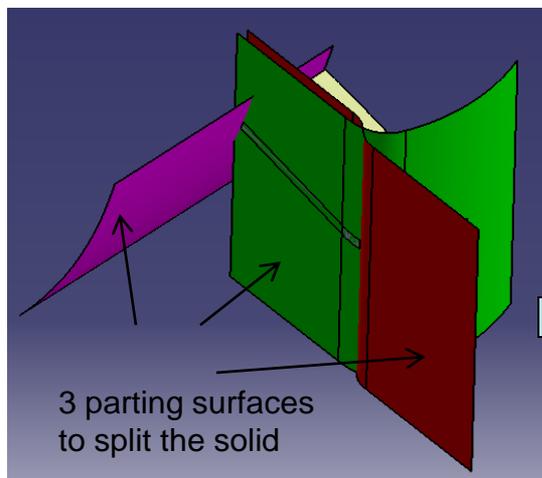
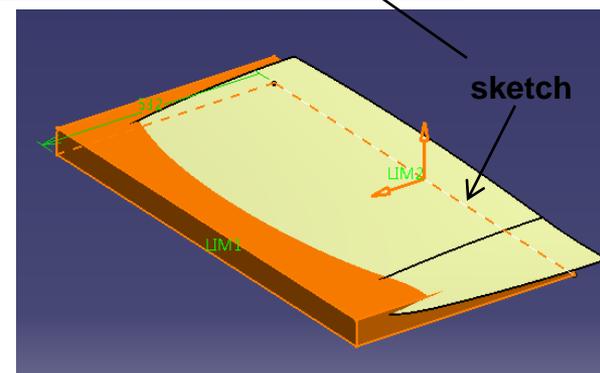
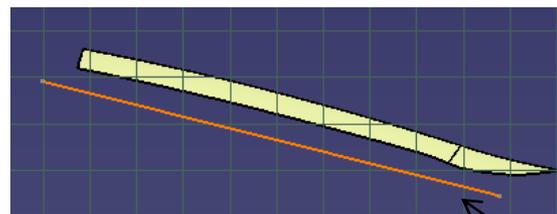
A- 97



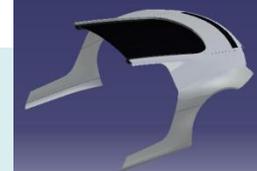
R8_rear cover

Tutorial 8E

- Switch workbench to “Part Design”
- Create a sketch on XZ plane
(Draw a straight line)
- Create a Pad (limit1 ~550mm, thick~60mm, totally cover the cut)
- Split by 3 parting surfaces (as shown)



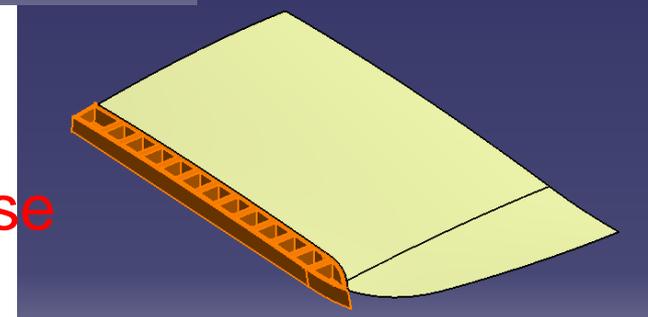
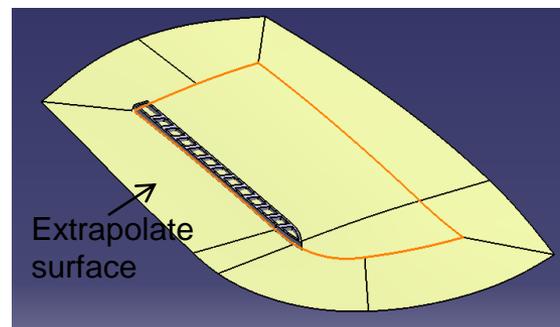
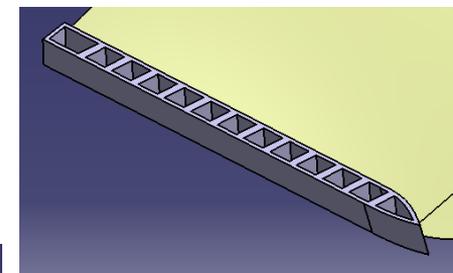
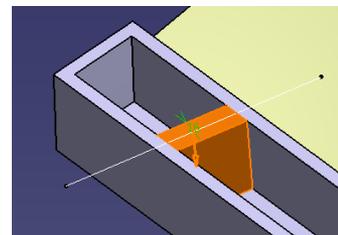
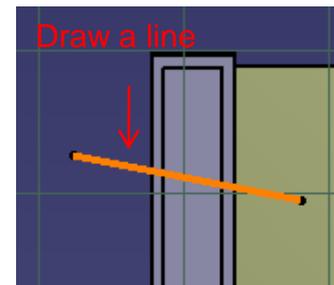
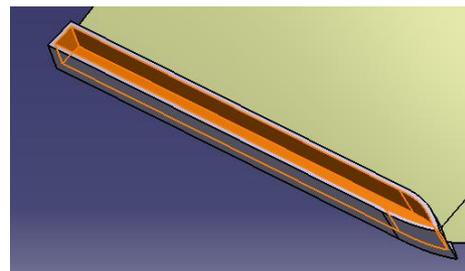
A- 98



R8_rear cover

Tutorial 8E

- Shell (8mm, one open end)
- Create a sketch on the planar face
- Create a stiffener (16mm thick)
- Create a rectangular pattern (12 instances, 60mm spacing)
- Switch workbench to “generative shape design”
- Create a boundary curve (whole boundary of the offset surface)
- Extrapolate the offset surface by 300mm (select “assemble result”)
- Switch workbench to “part design”
- Split the solid by the extrapolated surface
- Mirror



Not For Commercial Use

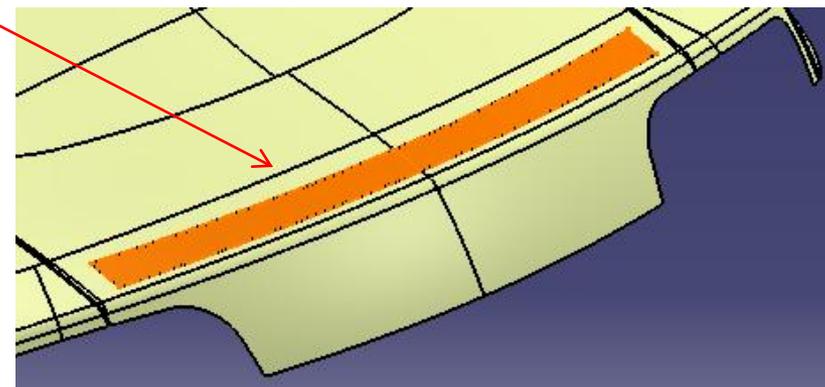
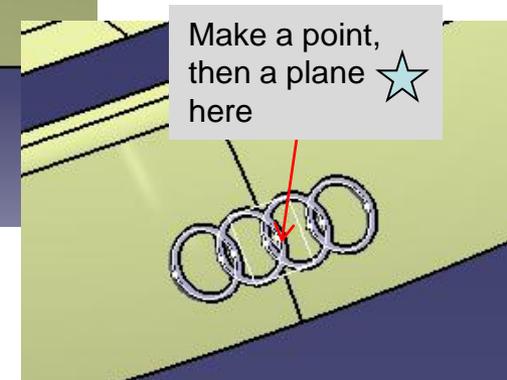
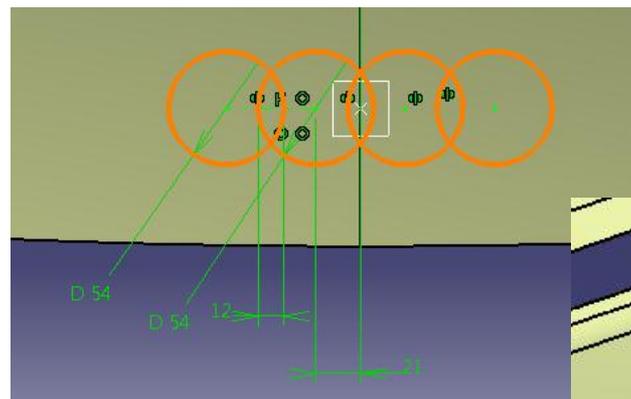
A- 99



R8_rear cover

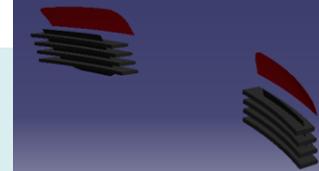
Tutorial 8E

- **Insert a new body** (Body.2)
- Create a point ★
- Create a plane
- Create a sketch on the plane
- Create a pad
(Limit 1= 5mm, Limit 2= 5mm, thickness 1,2 = 3mm)
- Switch workbench to “generative shape design”
- Insert a new geometrical set
- Create a split surface & symmetry (as shown)
- Apply material “Grey Blue” to geometrical set.2
- Apply material “Black” to geometrical set.3
- Apply material “Black” to geometrical set.4
- Apply material “plastic black” to Partbody
- Apply material “tungsten” to Body.2
- **Save File as “R8_rearcover_a.catpart”**



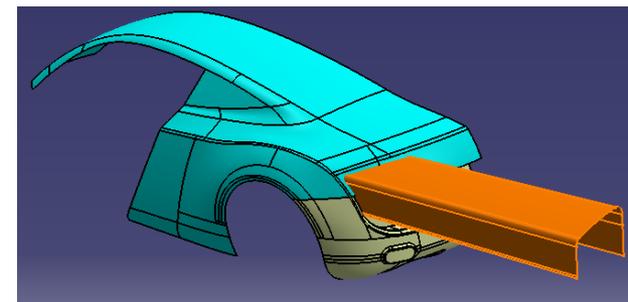
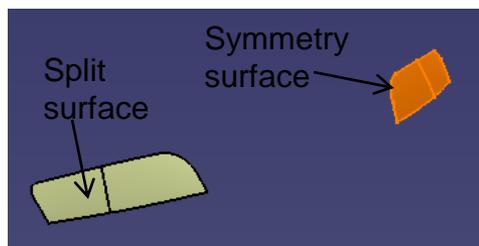
R8_tail light

Tutorial 8E

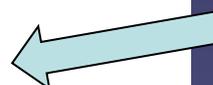
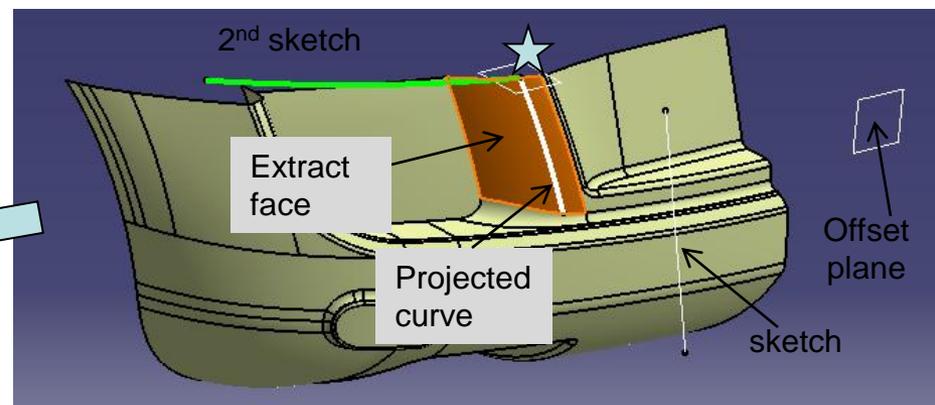
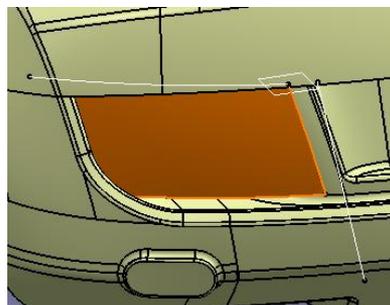
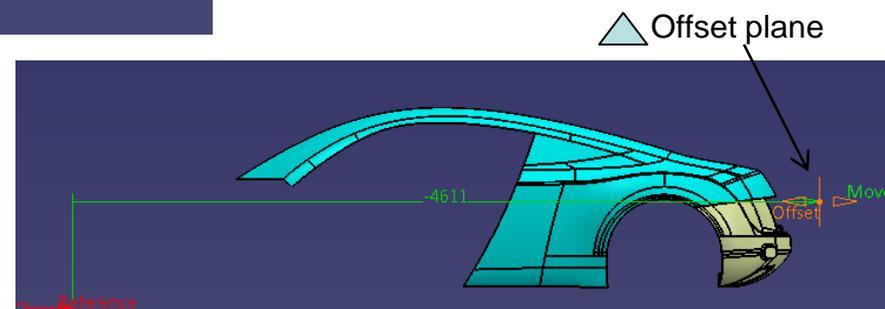


- **Start a new part file**
- Copy 3 surfaces from the master model
(Paste Special, “as result with link”)

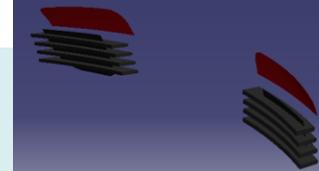
- Split surface by parting surface
- Symmetry



- **Insert a new geometrical set**
- Create an offset plane ▲
- Create a sketch on the plane (draw a line)
- Extract a face
- Project sketch onto the extract surface
- Create a plane at the endpoint ☆
- Create a sketch on the 2nd plane (draw an arc)
- Create a swept surface



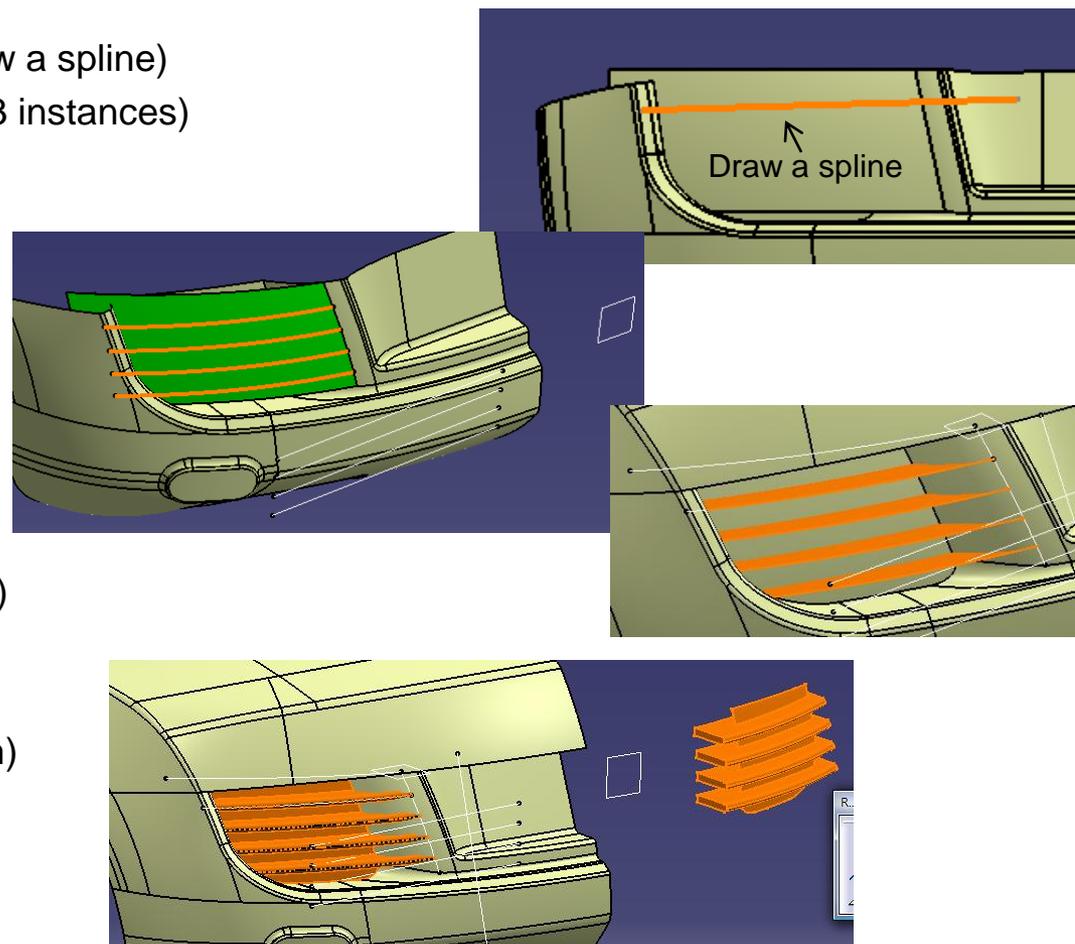
A- 101



R8_tail light

Tutorial 8E

- Create a sketch on the offset plane (draw a spline)
- Create Parallel curves (spacing 43mm, 3 instances)
- Project curves on the swept surface
- Extruded surfaces (x4) – 98 mm long
- Extract a back face
- Switch workbench to “Part Design”
- Thick surface (thickness1,2 = 8mm) (x4)
- Fillet R8mm
- Thick surface (back extracted face, 2mm)
- **Mirror**
- Apply “Plastic black” to PartBody
- Apply ‘DS red’ to “geometrical set.2”
- **Save File as “R8_taillight_a.catpart”**

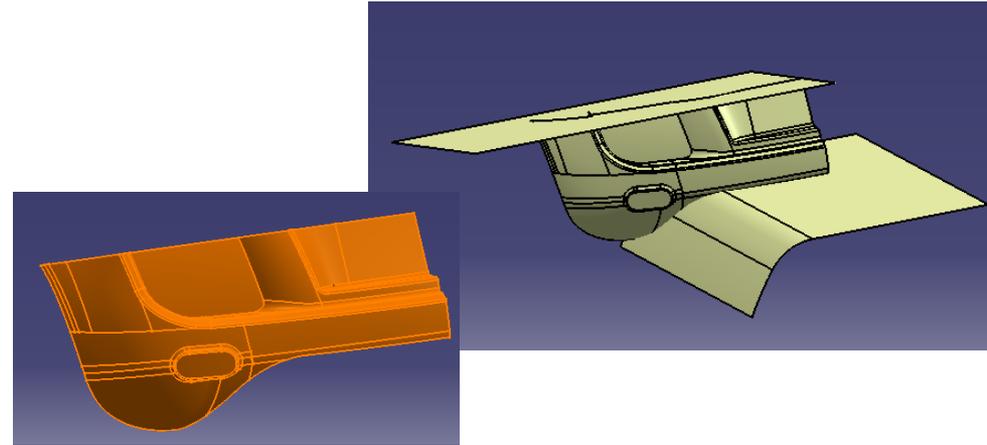




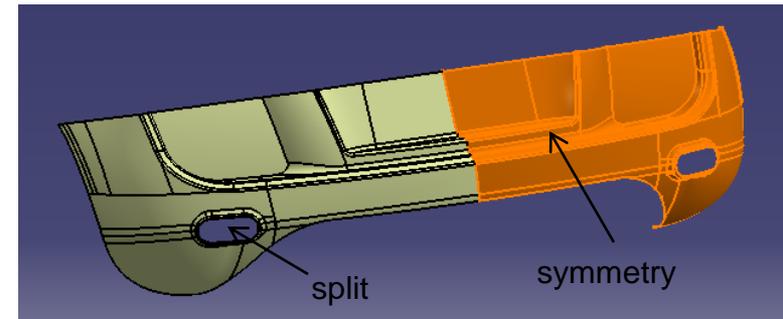
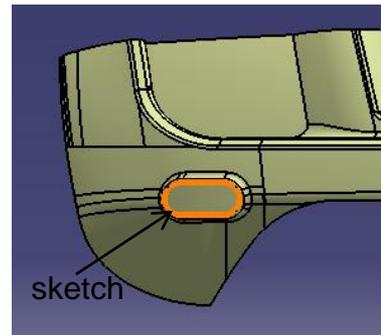
R8_rear body

Tutorial 8E

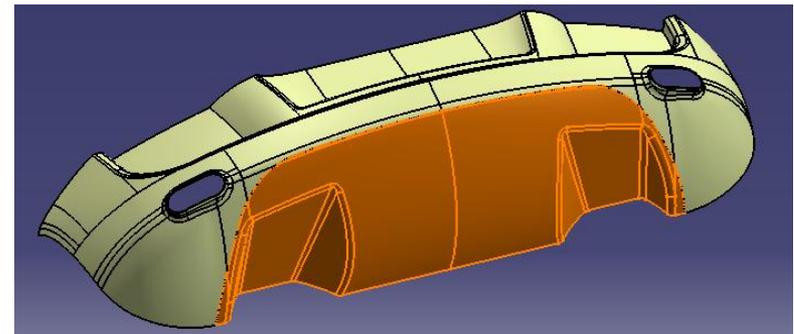
- **Start a new part file**
- Copy 3 surfaces from the master model
(Paste Special, “as result with link”)
- Create an offset “top” parting surface (3mm)
- Split surface by the offset surface & the other parting surface



- Create a sketch on Yz plane
- Project sketch onto surface
- Split surface
- Symmetry surface



- **Insert a new geometrical set**
- Show the original copied surfaces from the master model
- Split surface by a parting surface
- Symmetry surface



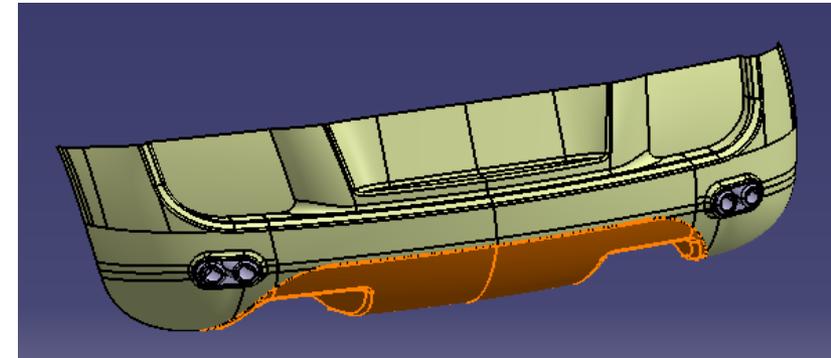
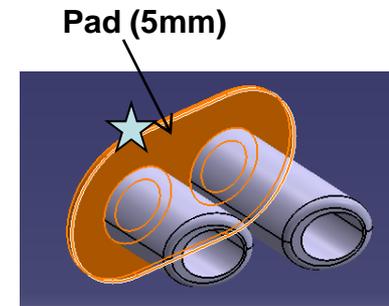
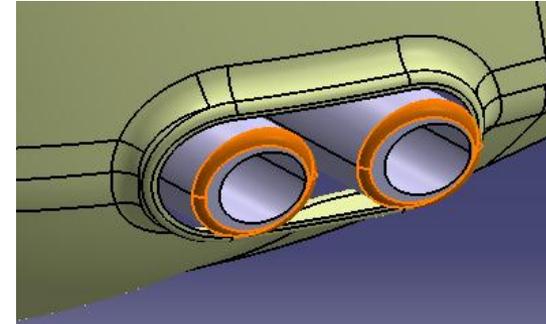
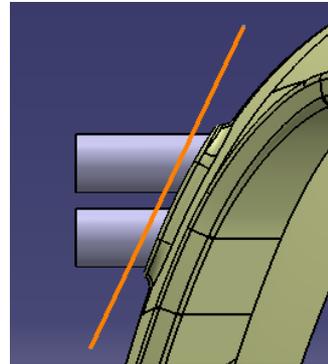
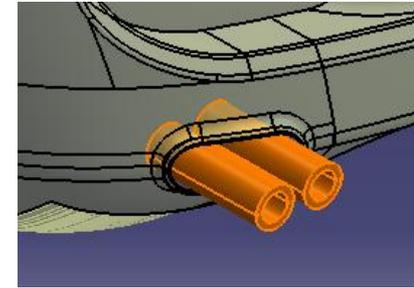
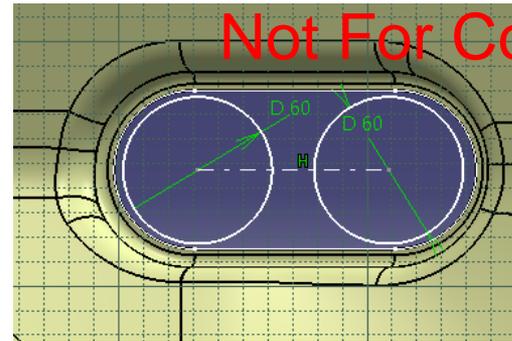
A- 103



R8_rear body

Tutorial 8E

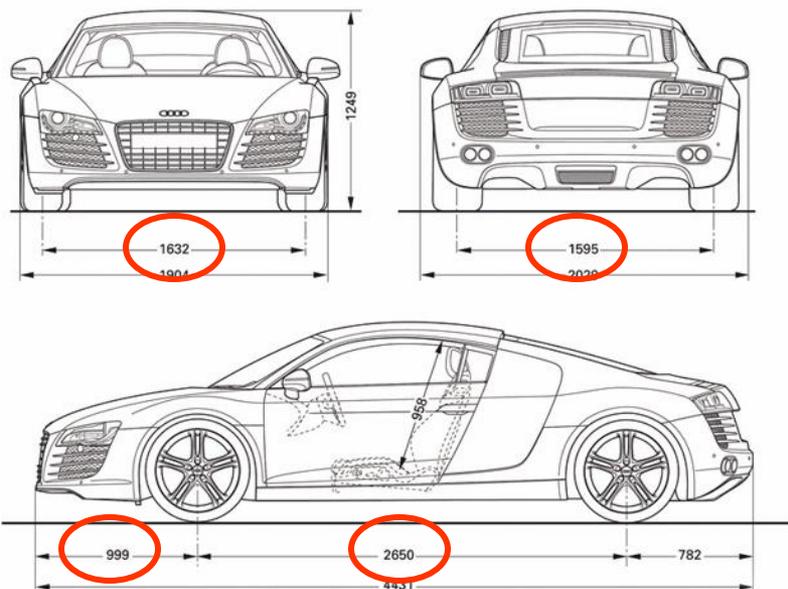
- Switch workbench to “Part Design”
- Create an offset plane (4230mm from YZ plane)
- Create a sketch (two circles)
- Pad (190mm, 10mm thick)
- Create a sketch on XZ plane (a line)
- Pocket (up to last)
- Fillet 6mm
- Create a sketch
- Pad (5mm) ★
- Mirror
- Apply material “grey blue” to geometrical set.2
- Apply material “plastic black” to geometrical set.3
- Apply material “titanium” to Partbody
- **Save File as “R8_rearbody_a.catpart”**



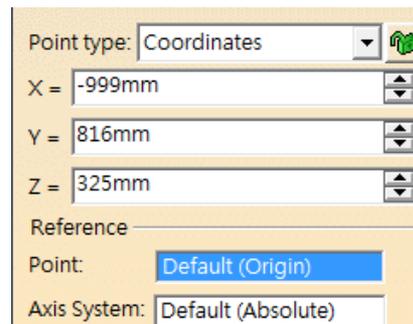
R8_dummy chassis

Tutorial 8E

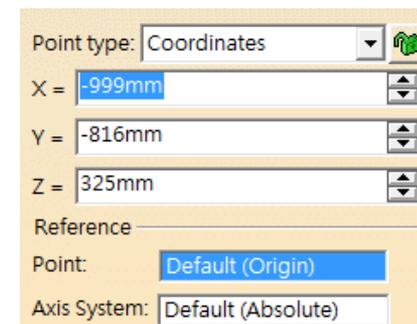
- Start a new part file



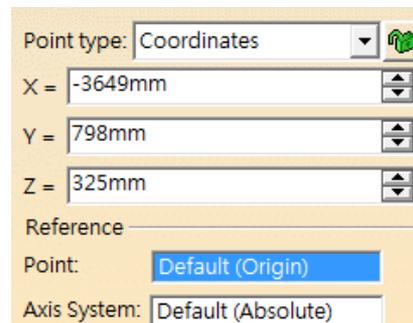
- Create 4 points as tables
- Create an Axis system at each point
- Save File as “R8_dummychassis_a.catpart”



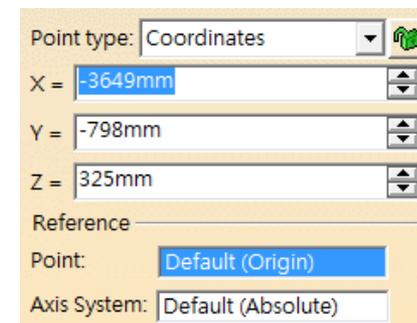
Front_wheel_left



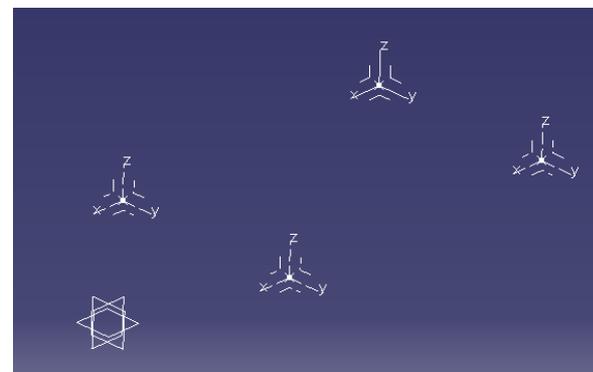
Front_wheel_right



Rear_wheel_left



Rear_wheel_right

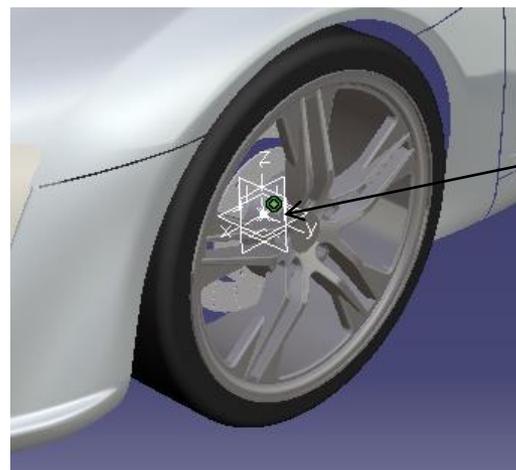
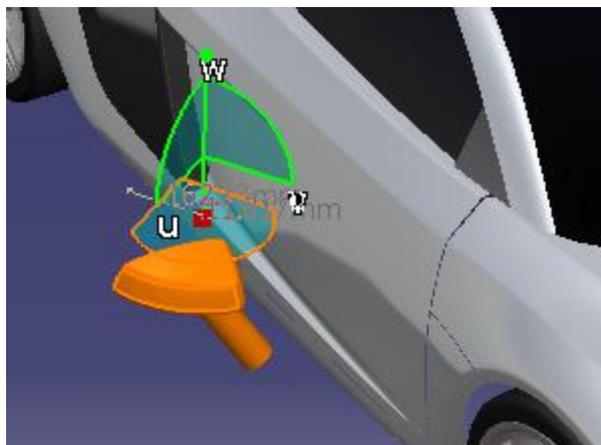


Assembly

Tutorial 8F

- File new product
- Insert all part files
- Insert front wheels, then locate them onto the Axis systems of “dummy chassis”
- Insert rear wheels, then locate them.

- Insert “mirror” part file
- Locate it by compass



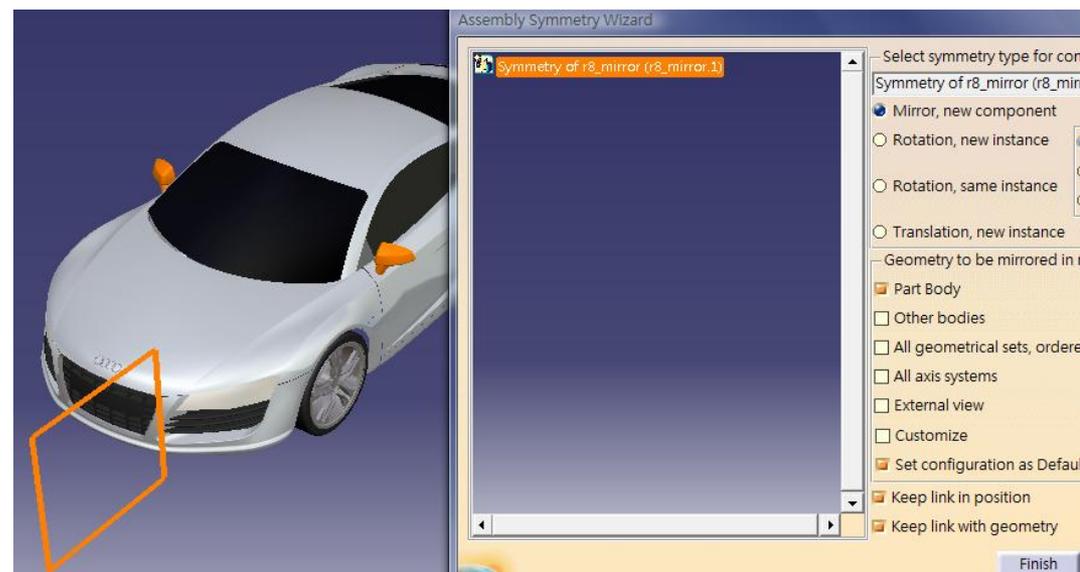
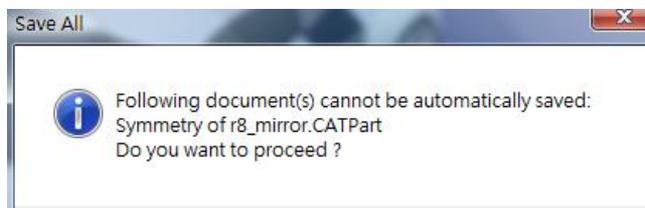
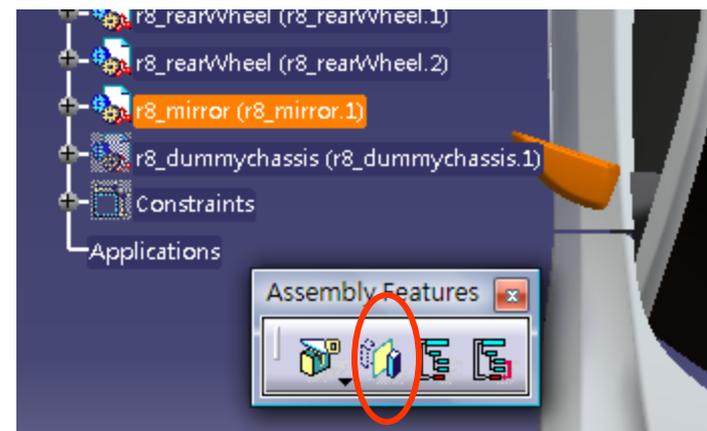
**Add 3 coincident constraints
(plane to plane)**

Assembly

Tutorial 8F

(After the part “mirror” has been located)

- Select the part “mirror”
- Click “Symmetry” Under the toolbar “Assembly Features”
- Select “XZ plane” of the part “R8_door”
- Highlight “keep link with position”
- Highlight “keep link with geometry”
- File /Save all
- (A new part file “Symmetry of R8_mirror.CATpart” is created)



- (Name the assembly as R8_assembly.CATproduct)

- END -

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ebsite : <http://www.youtube.com/dicksham>