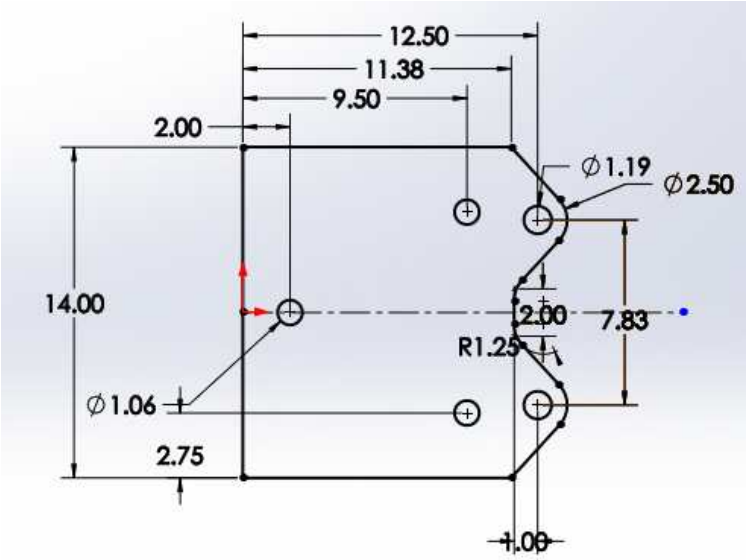
Introduction to SolidWorks A Comprehensive Guide with Applications in 3D Printing 1st edition Onwubolu Solutions Manual

SKU: 9781498731195-SOLUTIONS

Chapter 2: Geometric Construction Tools

1. Problem 2-1



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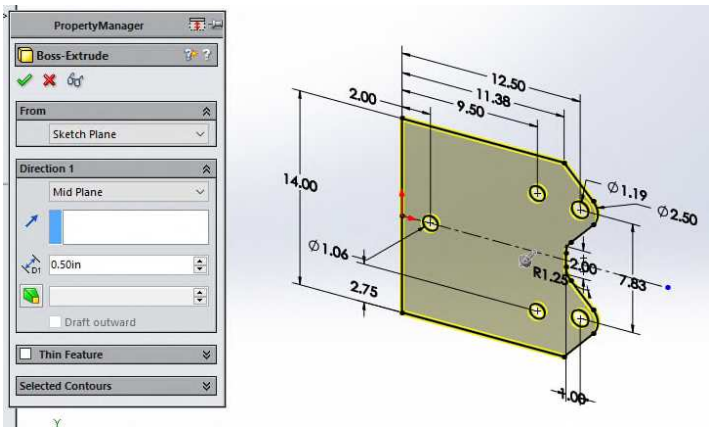

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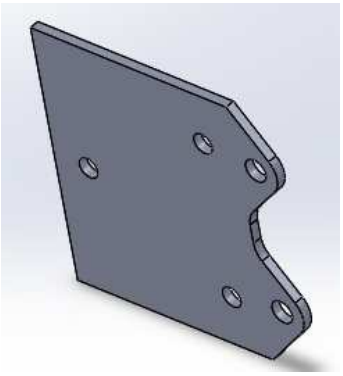

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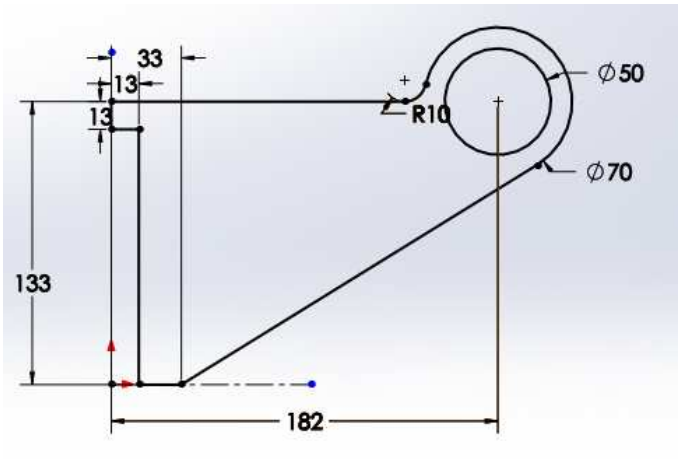
2. Problem 2-2



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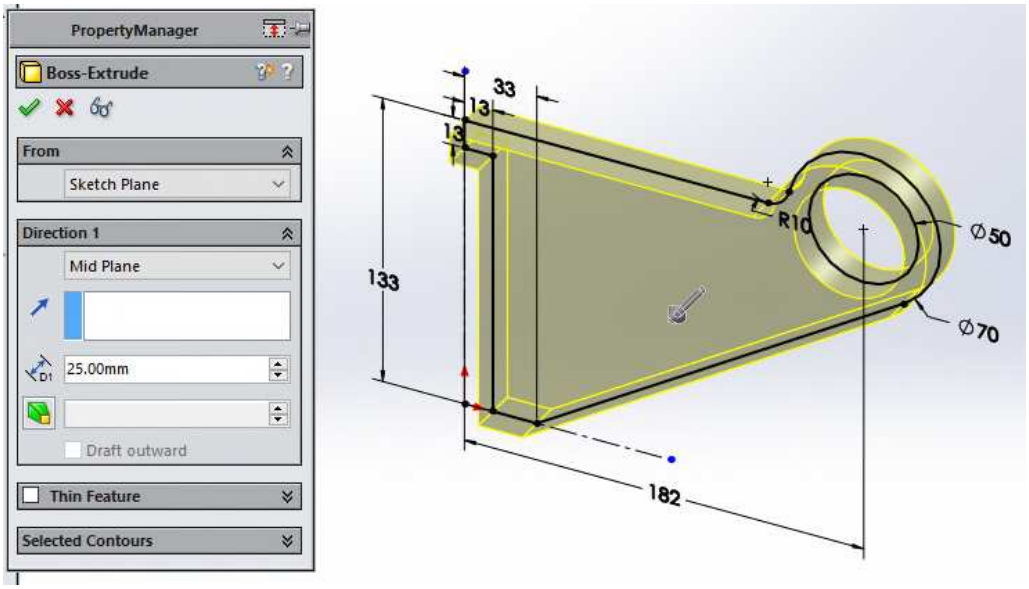

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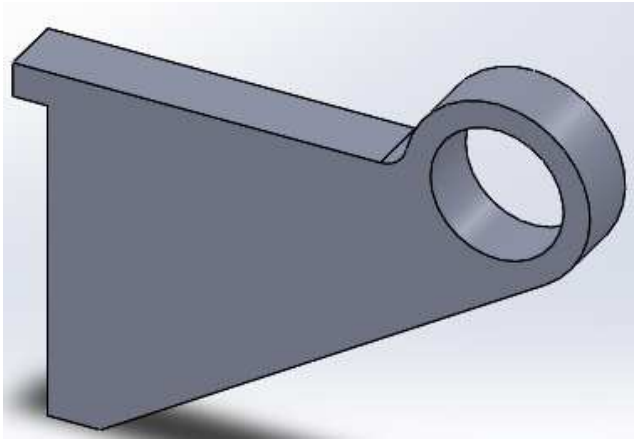

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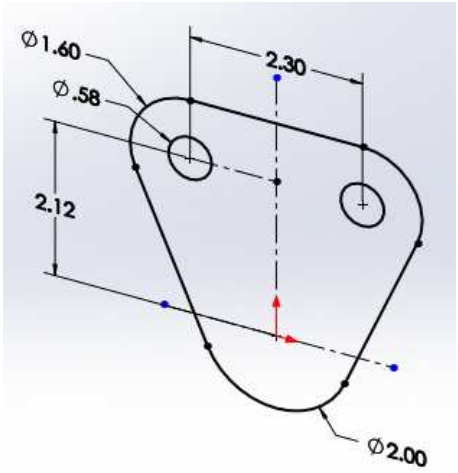
3. Problem 2-3



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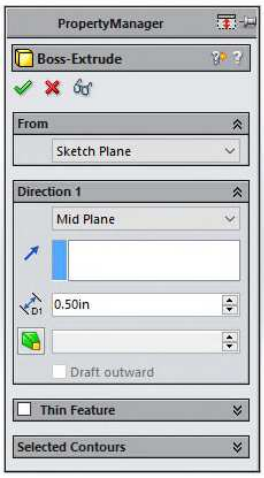

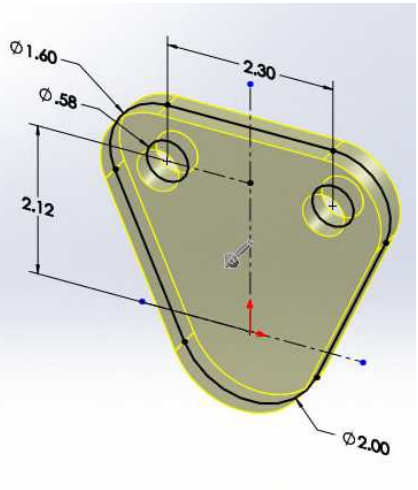

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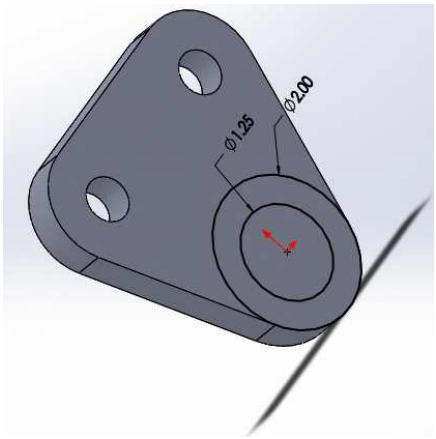

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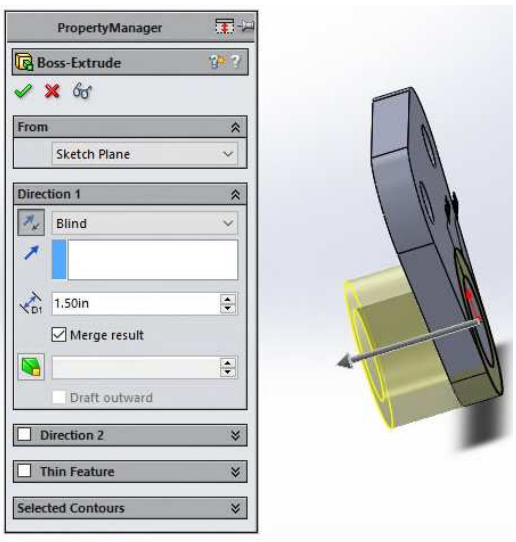

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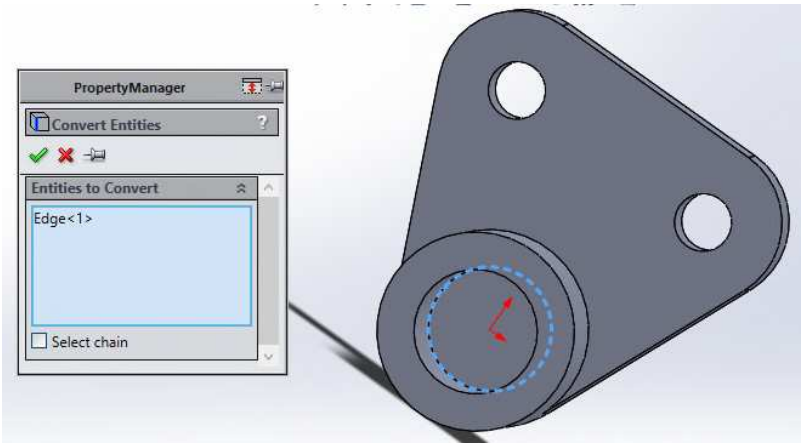

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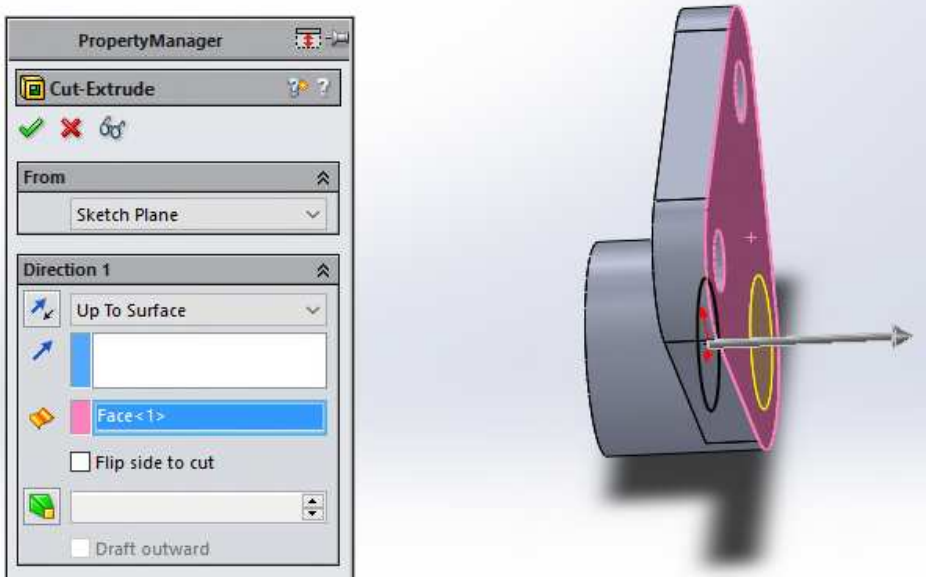

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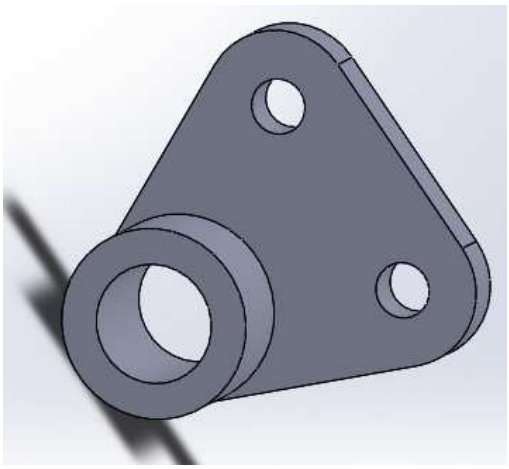
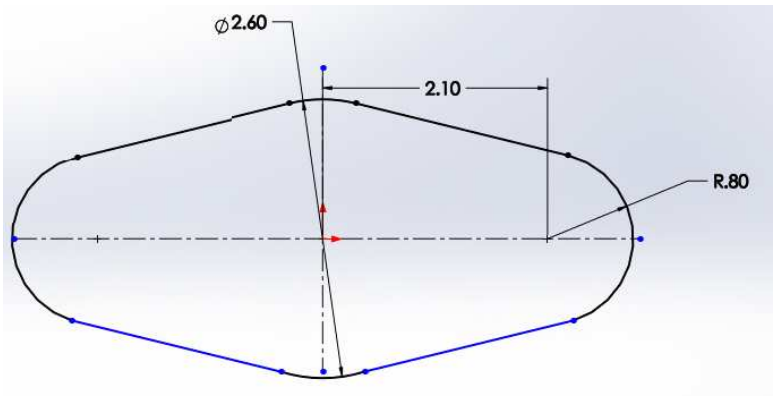


Step 7

4. Problem 2-4



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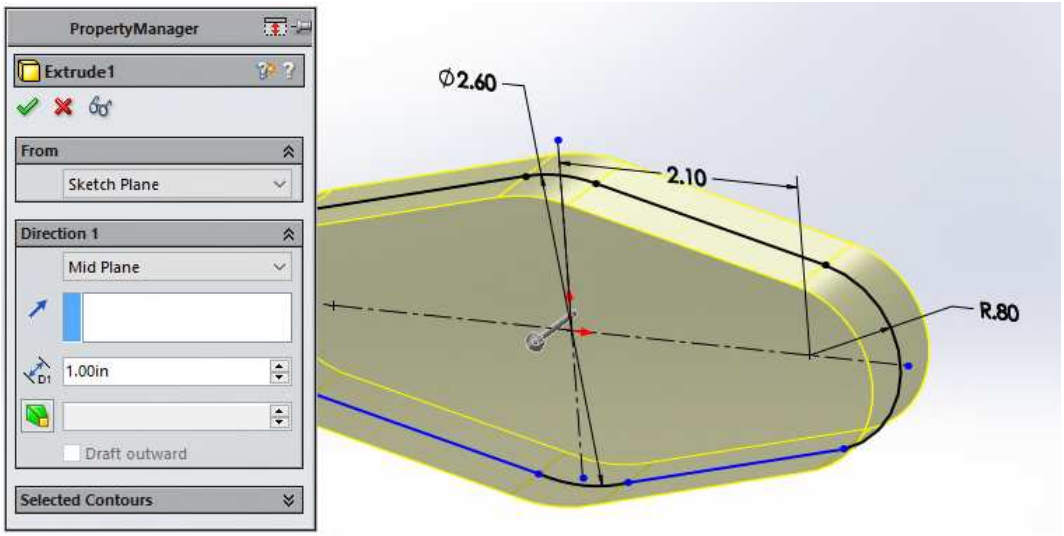

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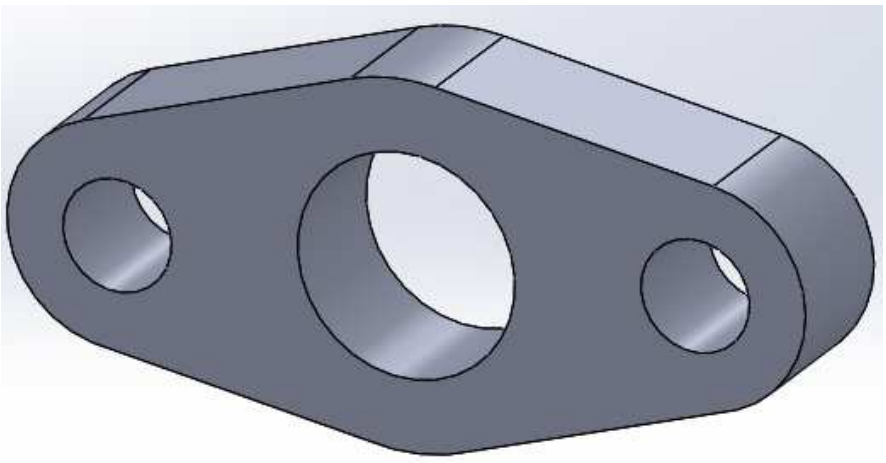

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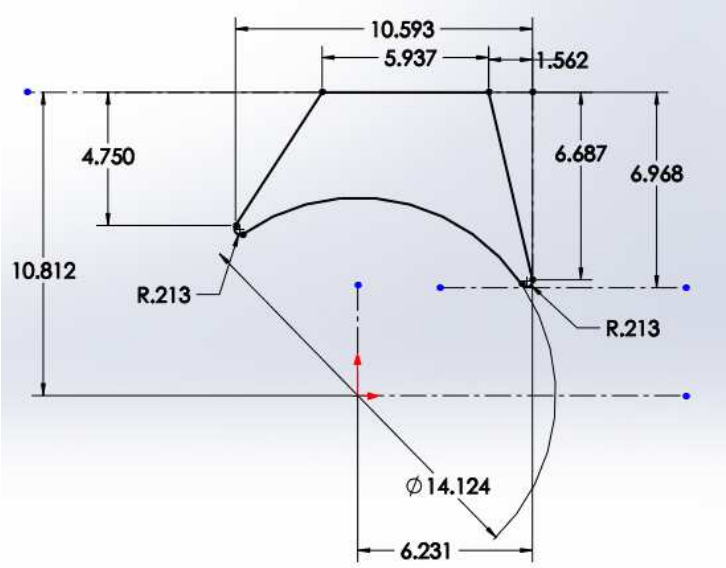
5. Problem 2-5



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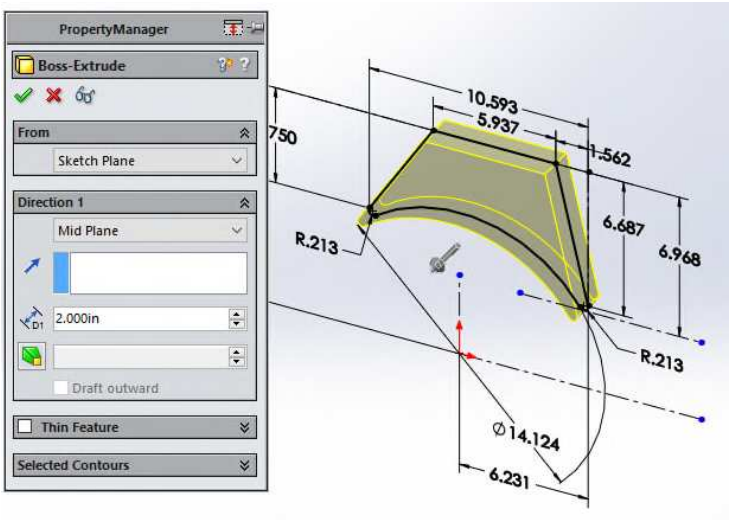

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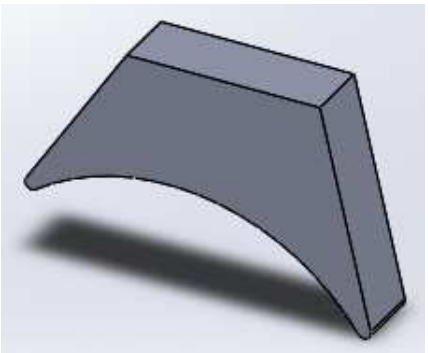

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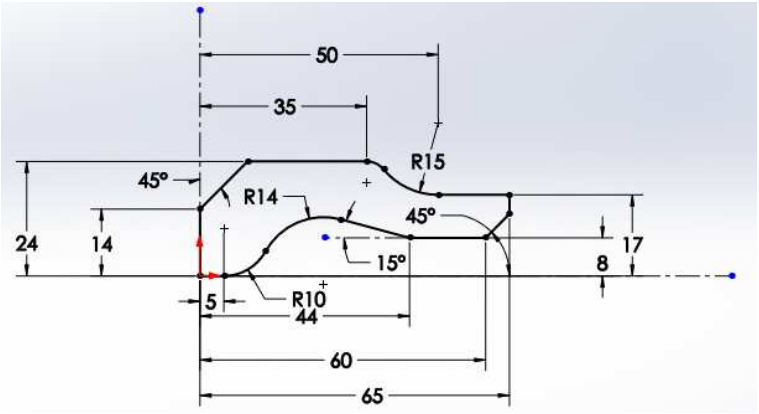
6. Problem 2-6



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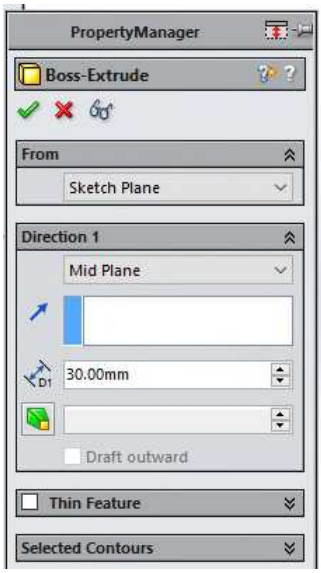

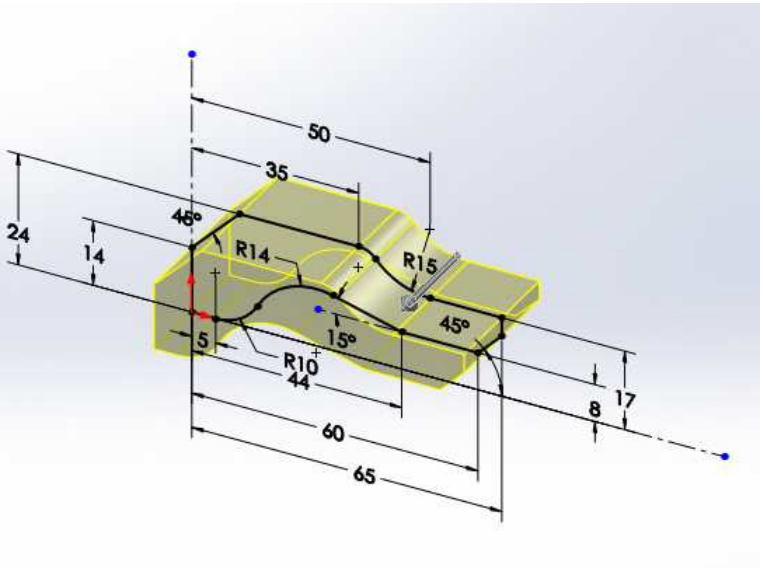

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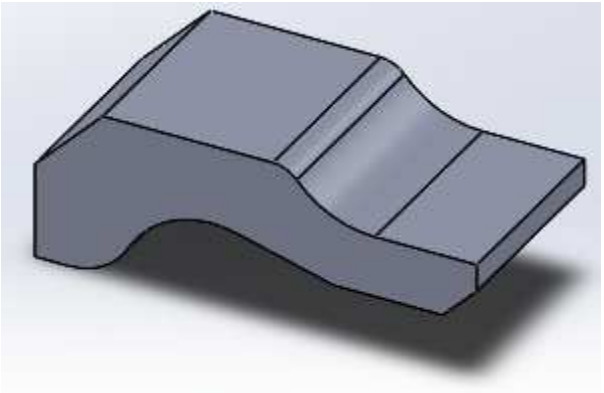

Step 3

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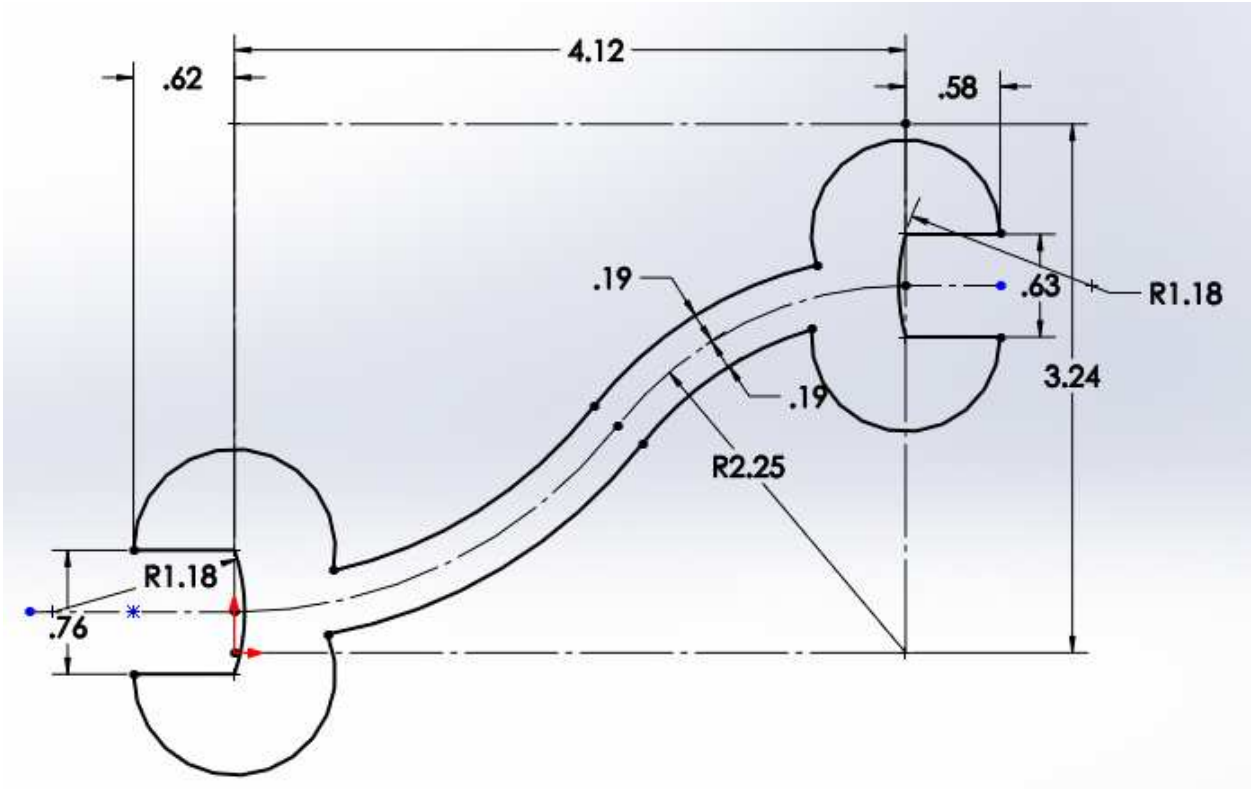

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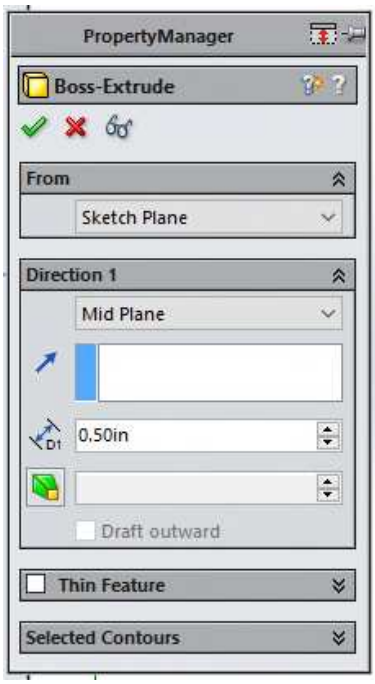

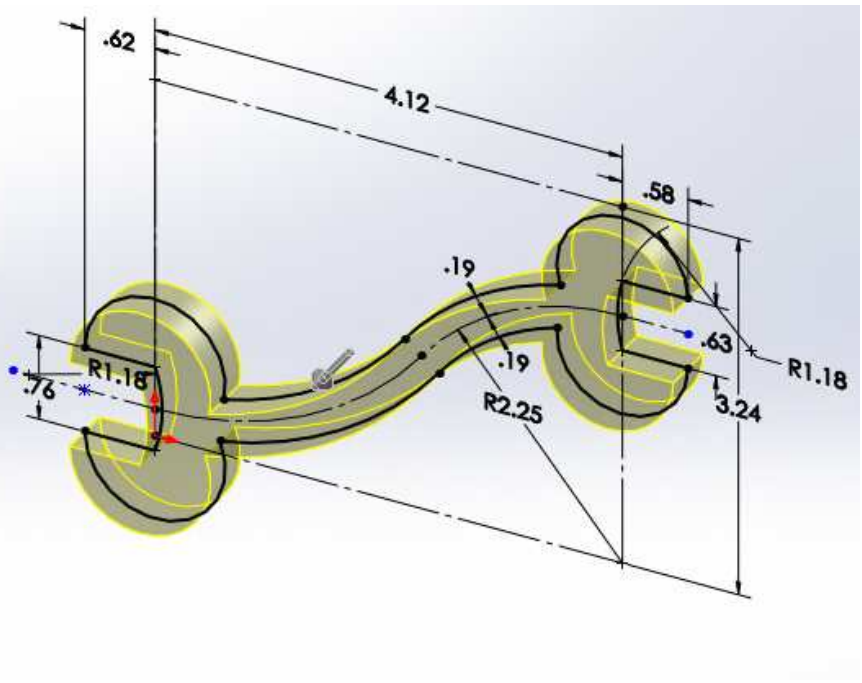

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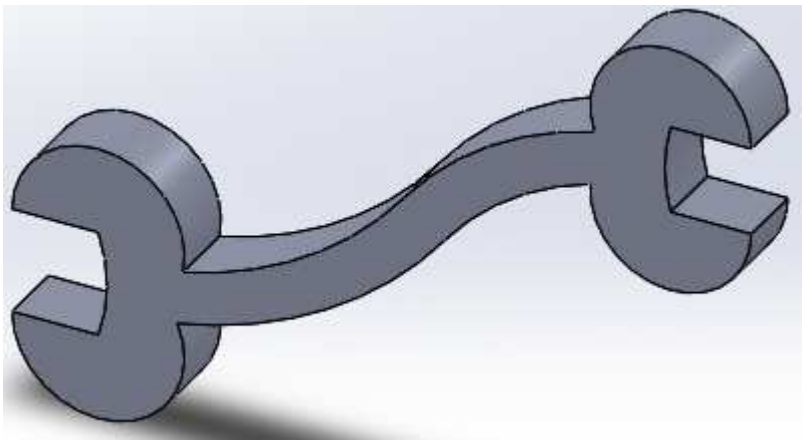

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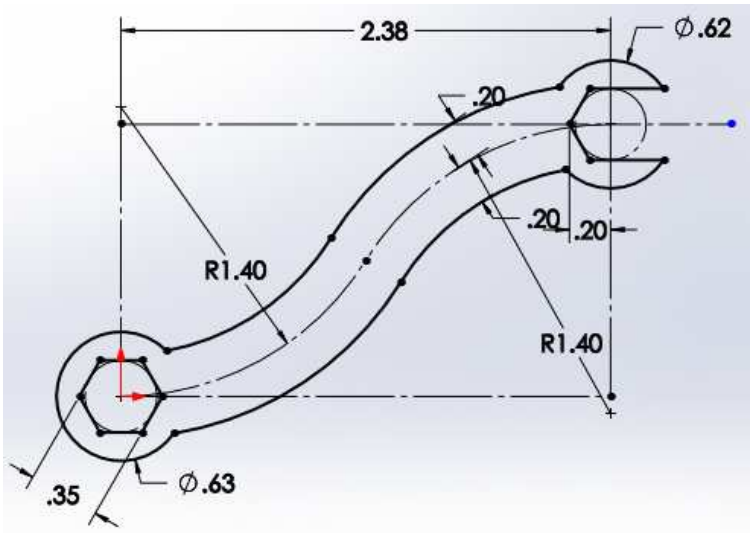
8. Problem 2-8



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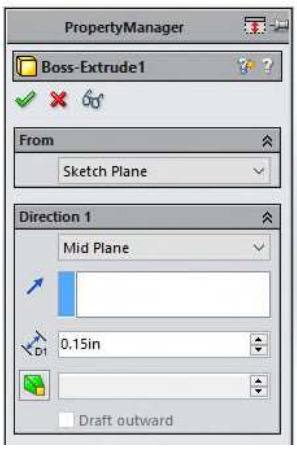

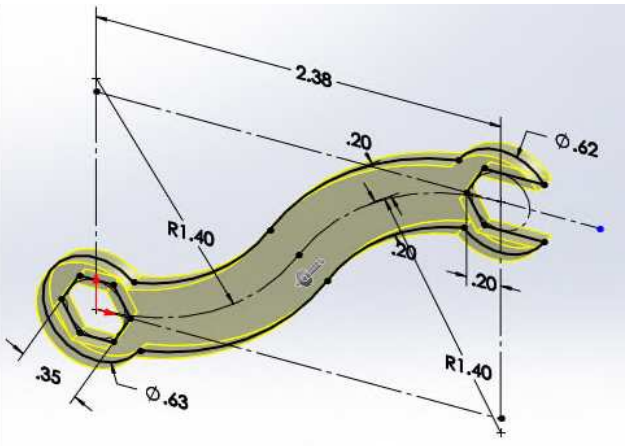

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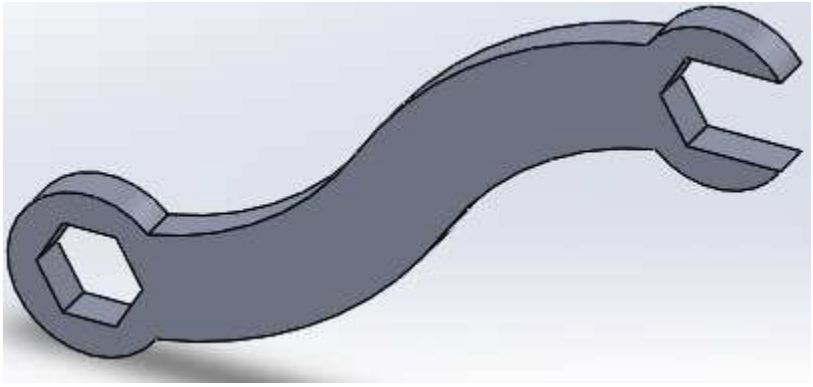

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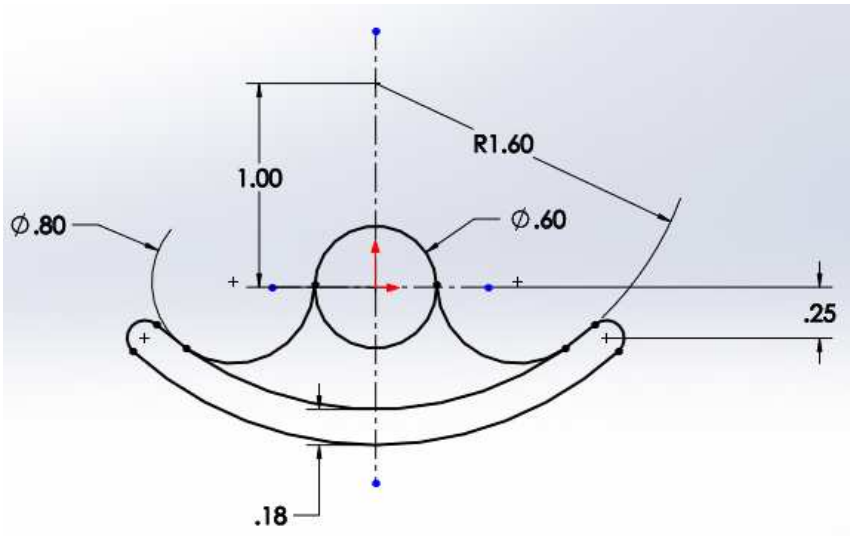
9. Problem 2-9



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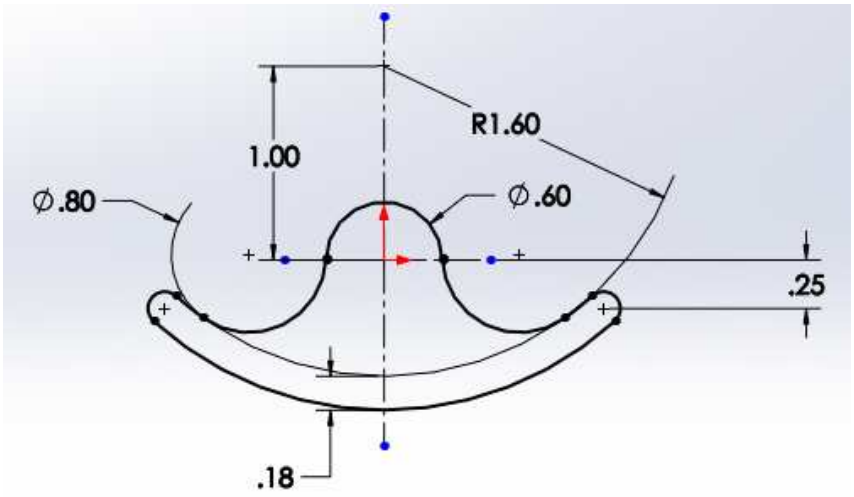

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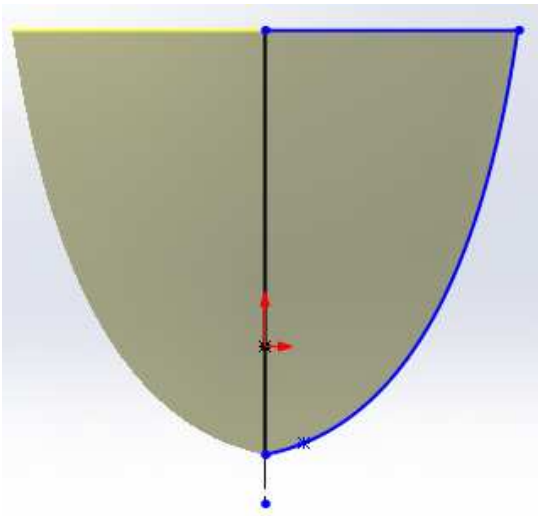
10. Problem 2-10



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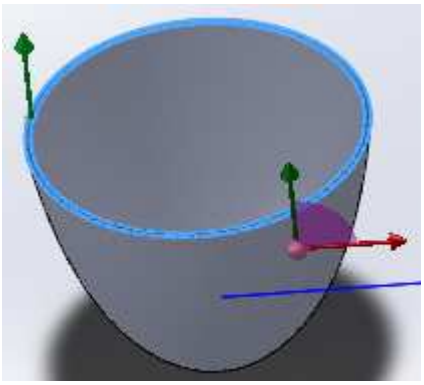

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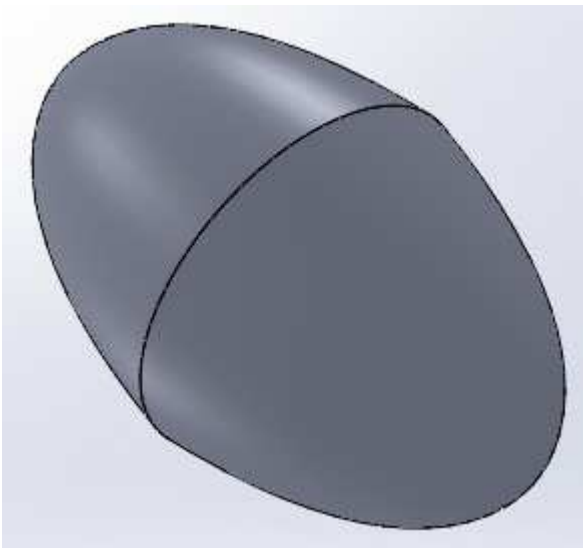

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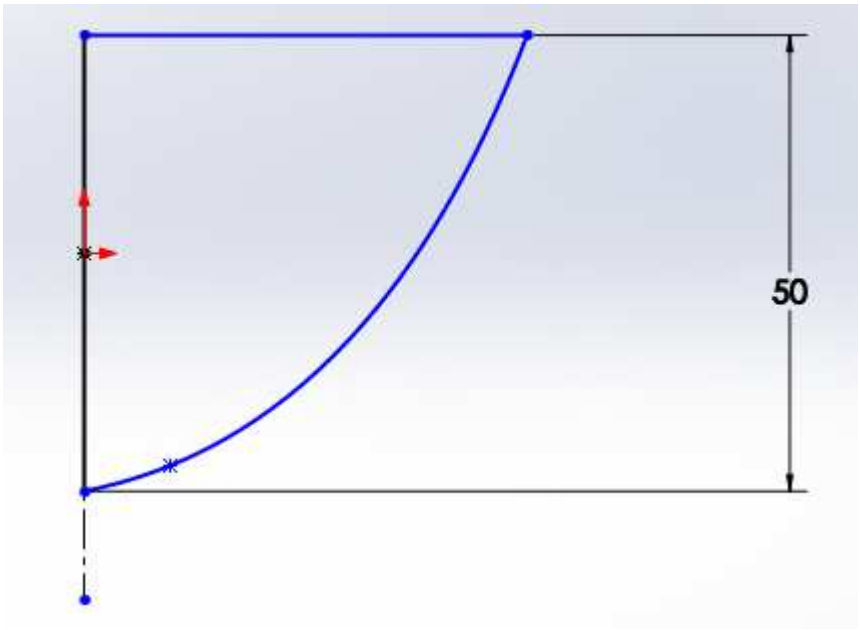
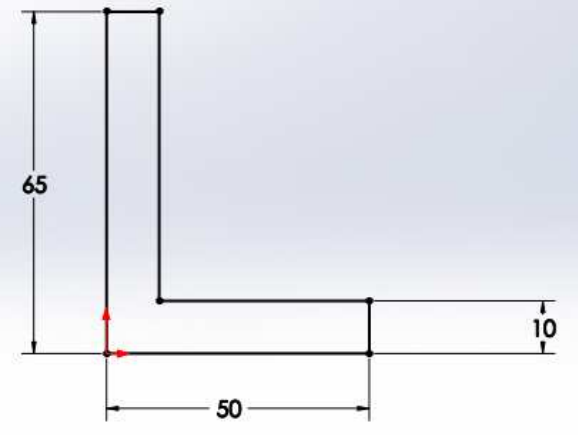
11. Problem 2-11

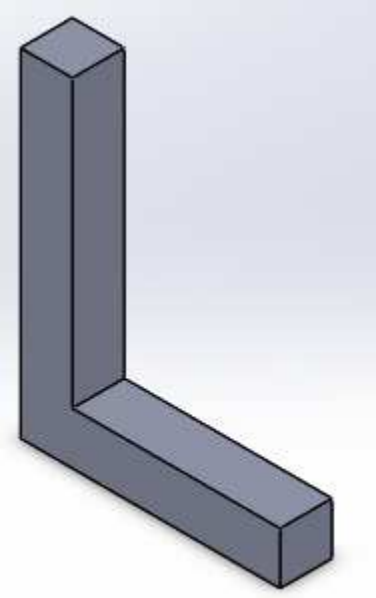


Step 1

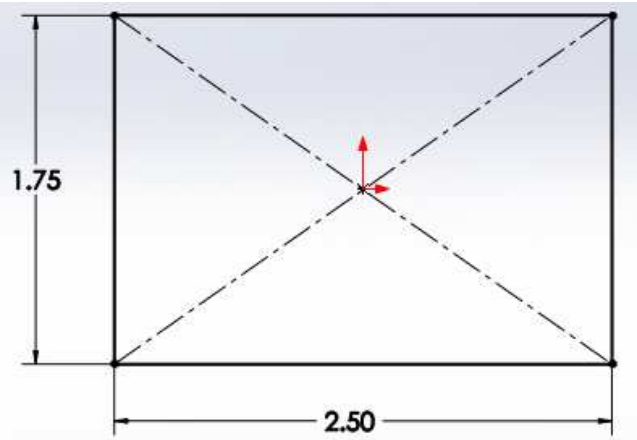
Step 2

12. Problem 2-12





13. Problem 2-13



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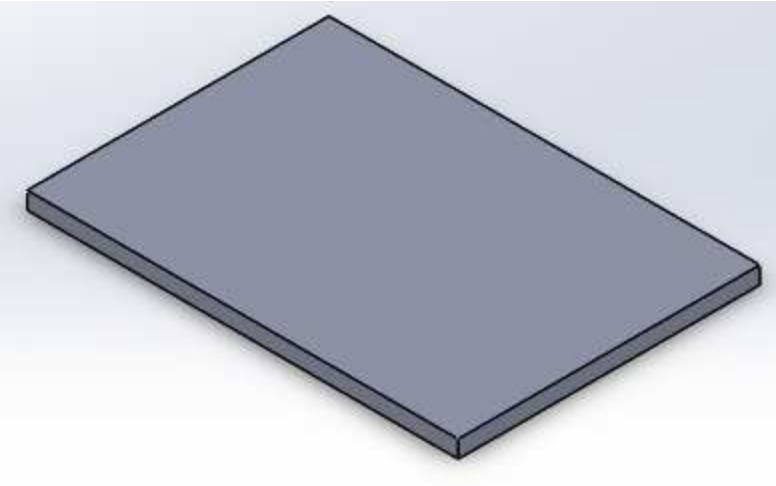

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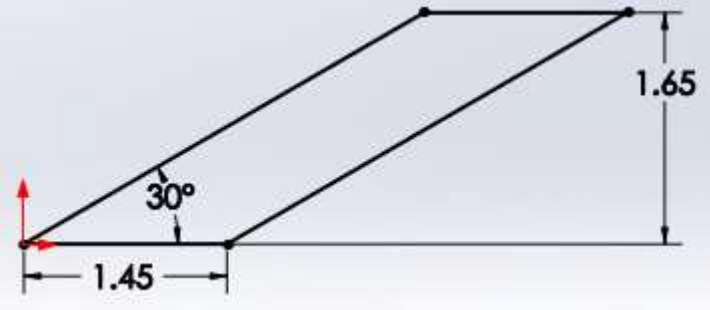
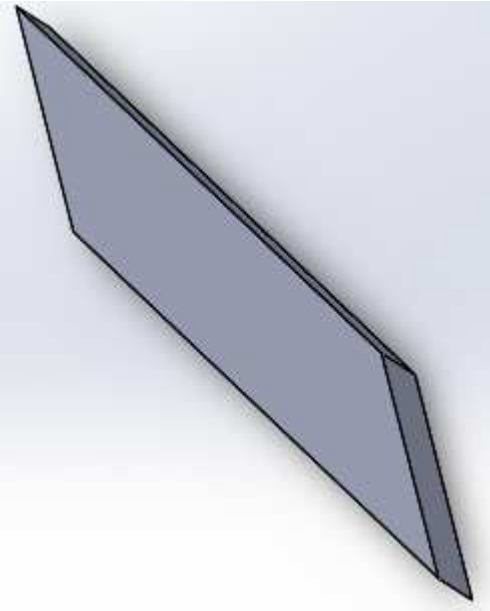
14. Problem 2-14





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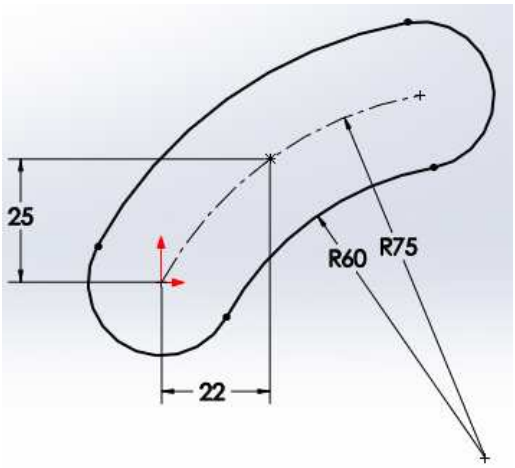

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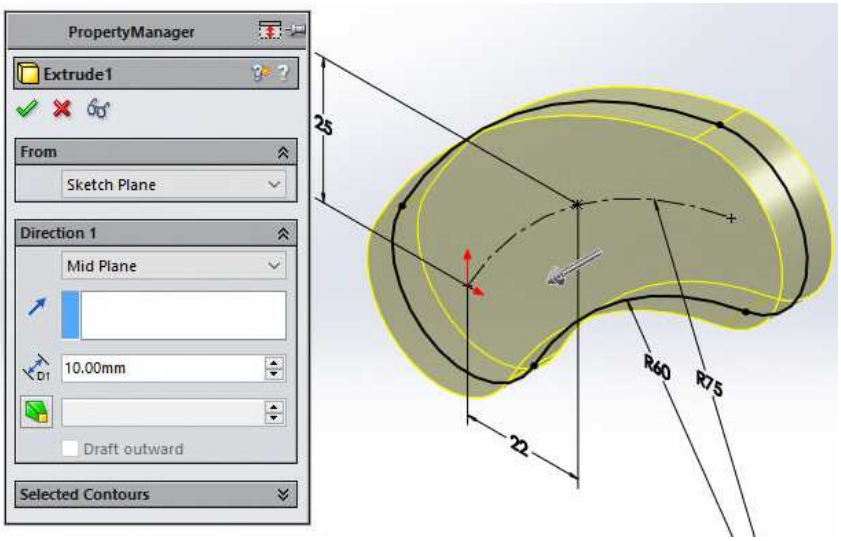

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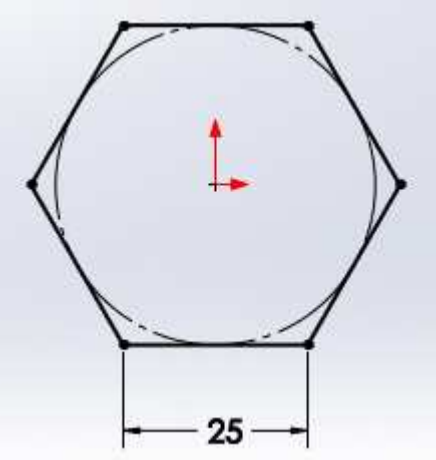

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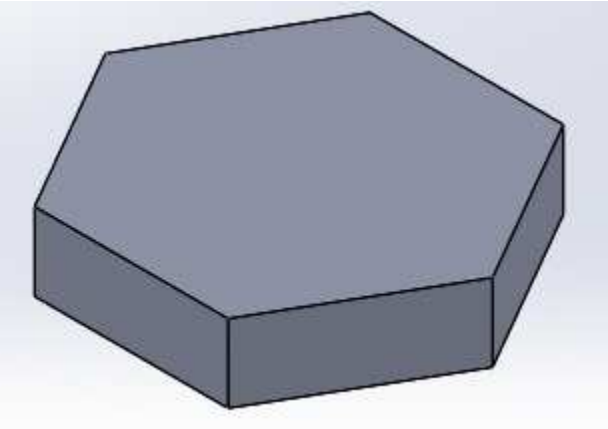

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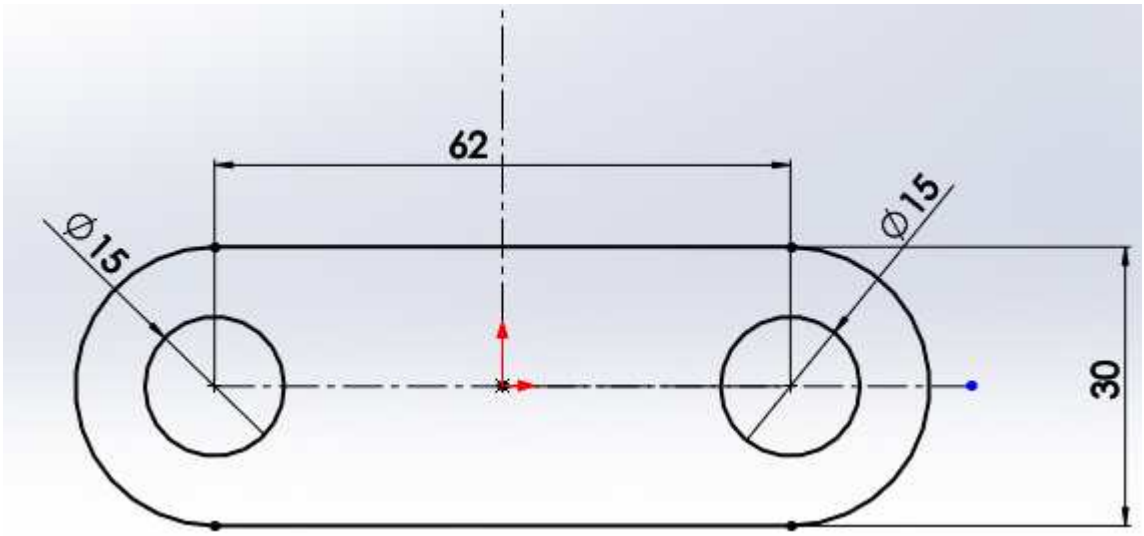

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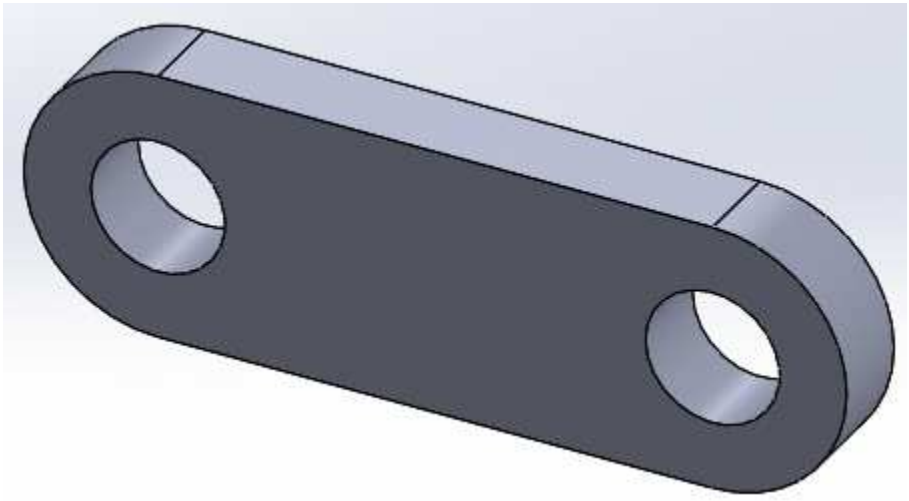
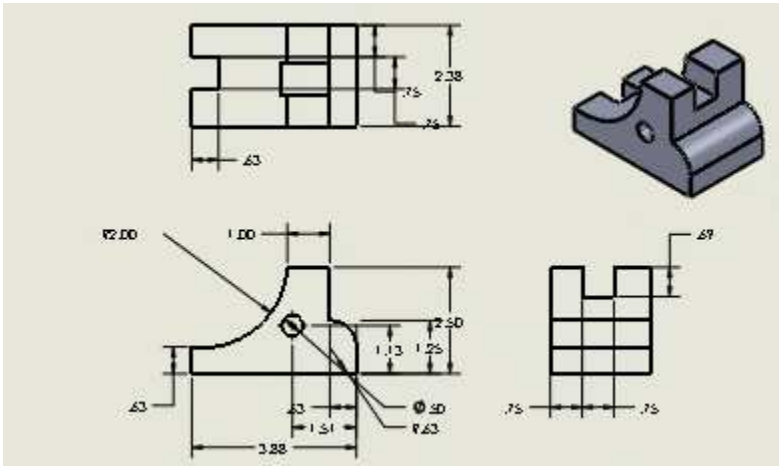


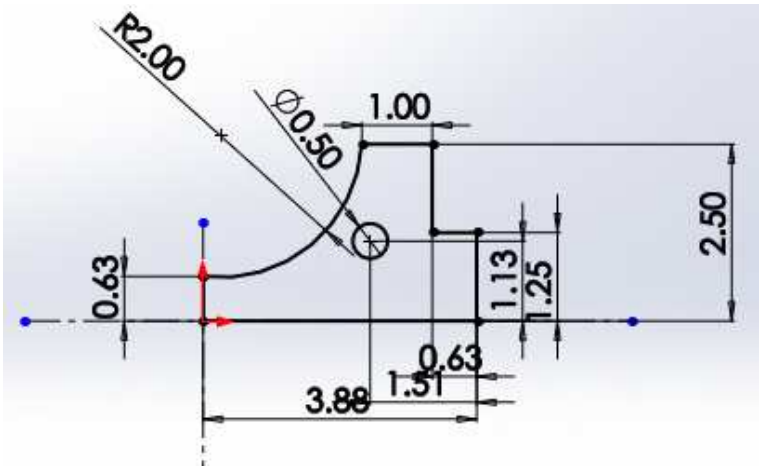
Step 2

Chapter 3: Features

1. Problem 3-1



Given problem



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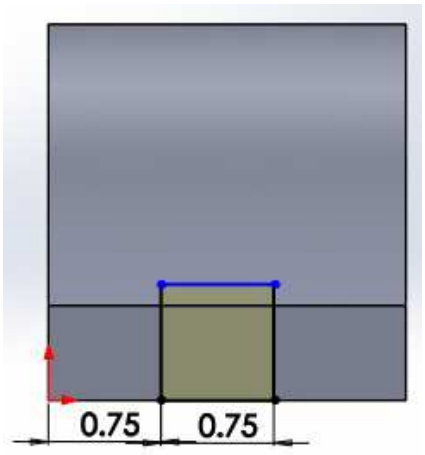

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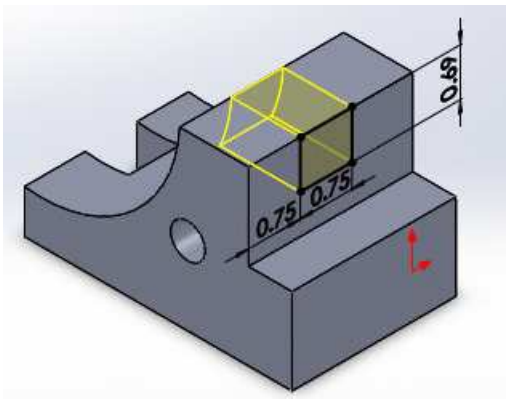

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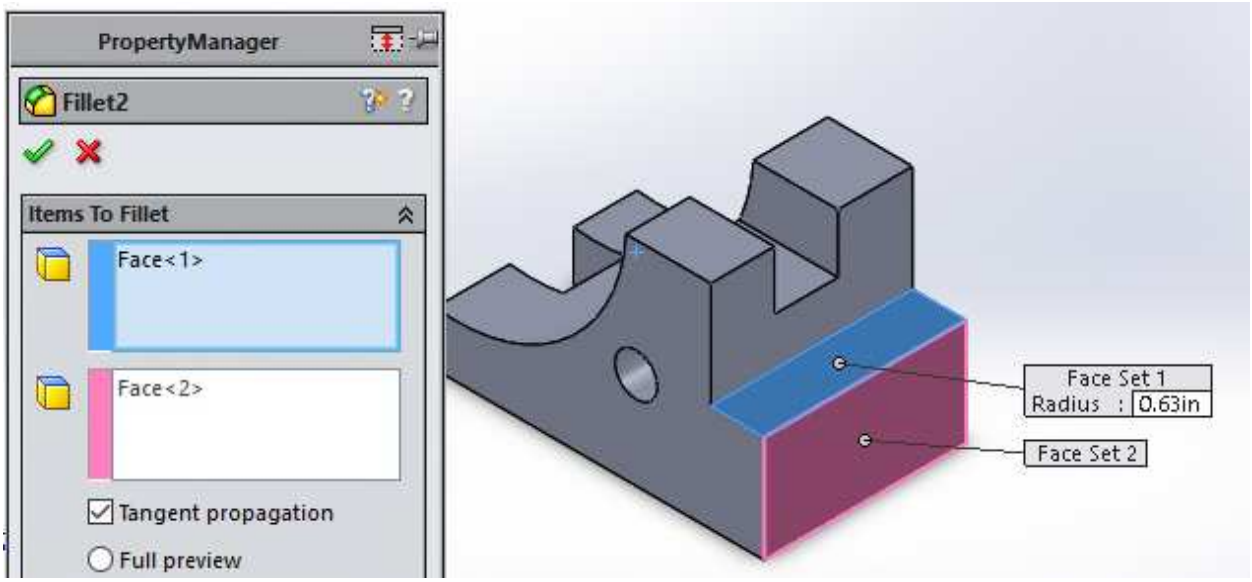
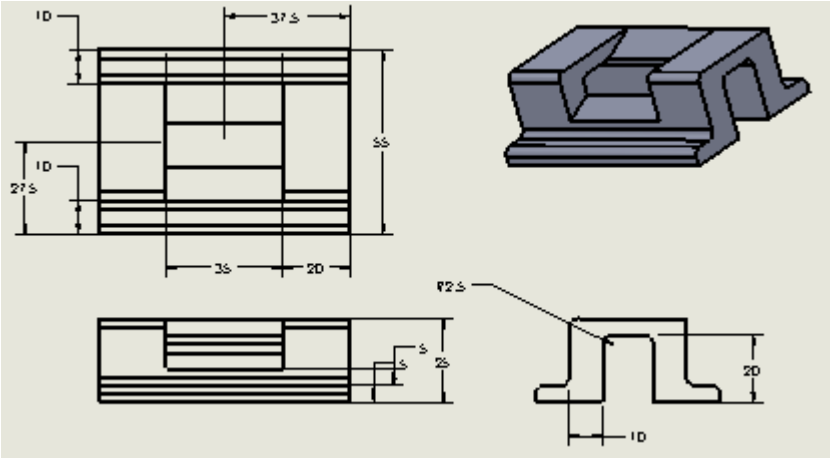


Step 4

2. Problem 3-2



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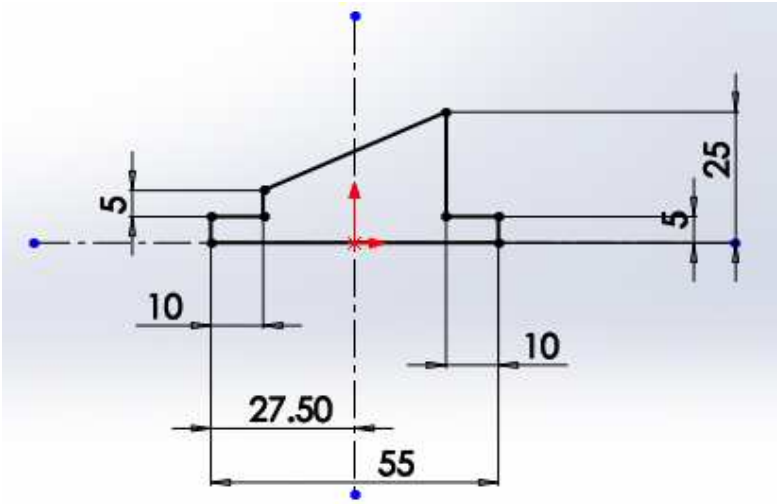

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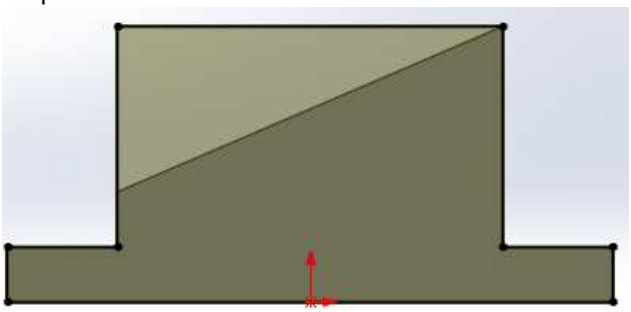

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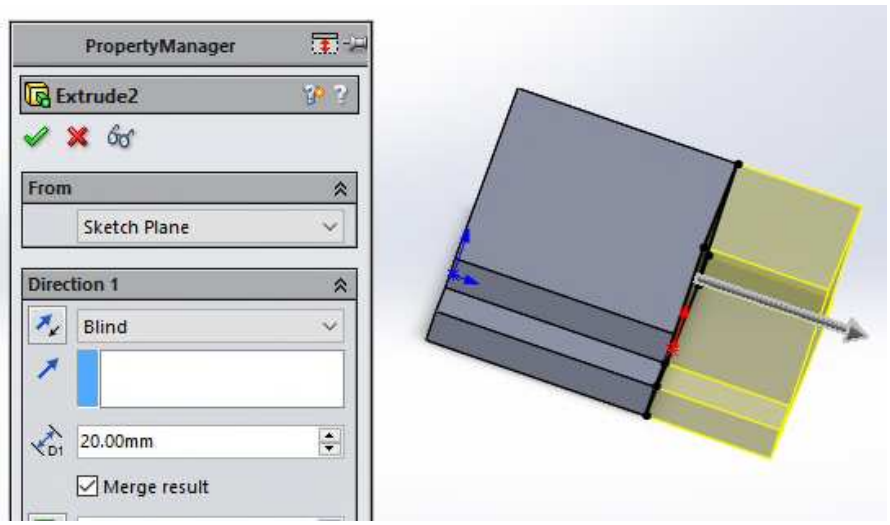

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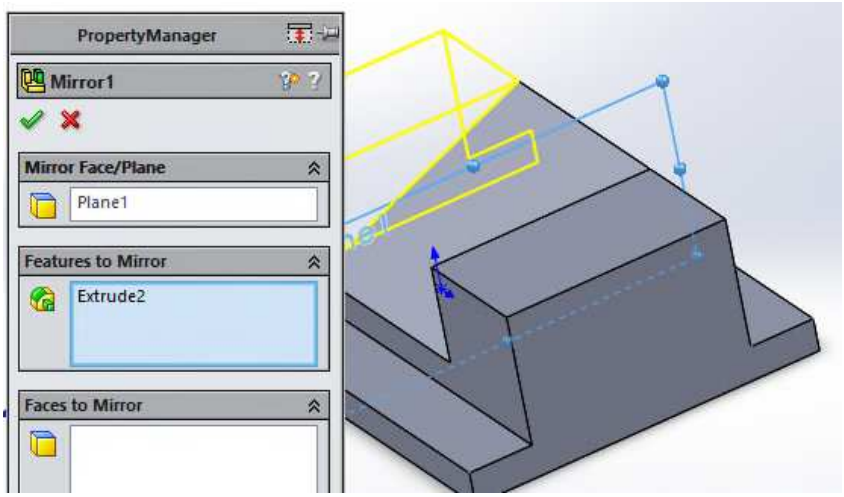
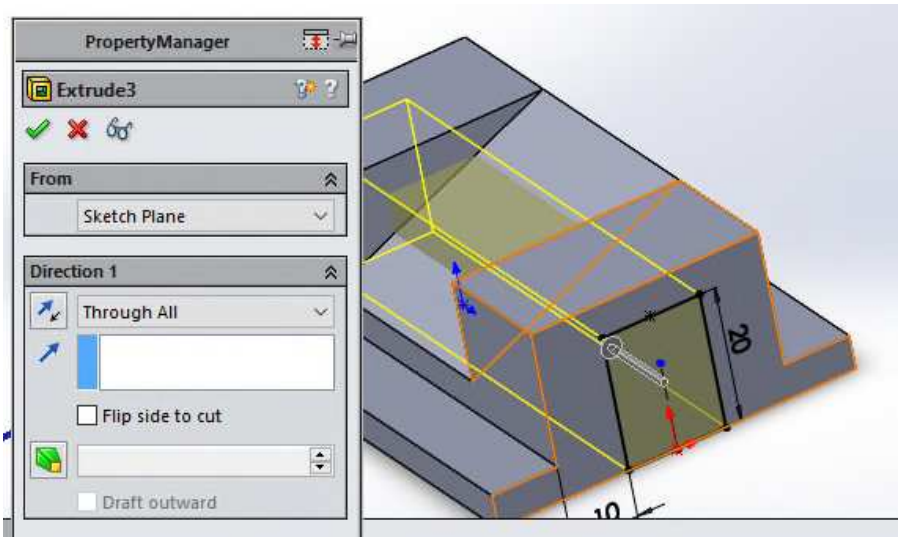
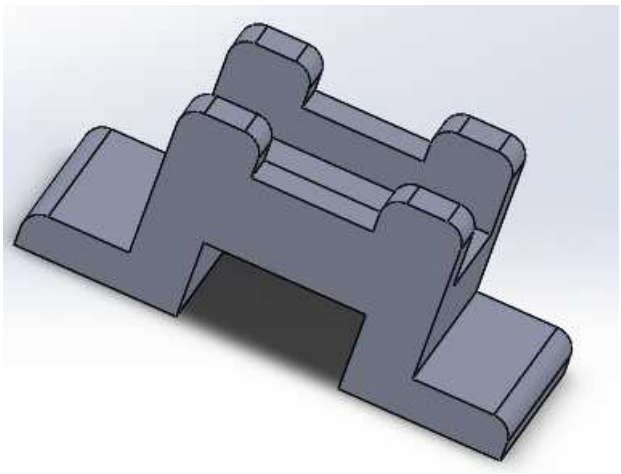


Step 4

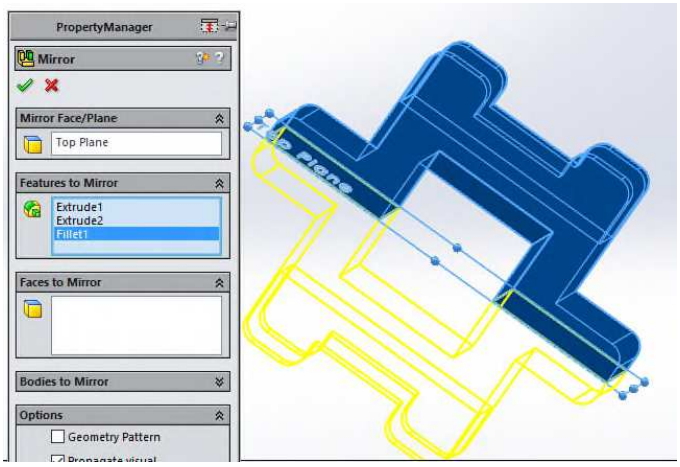


Step 5

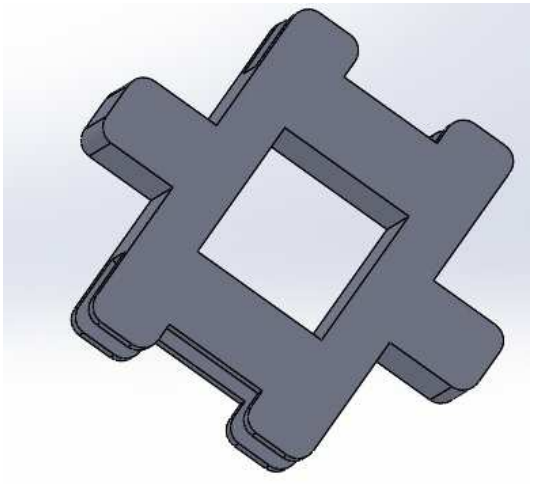
3. Problem 3-3



Step 1



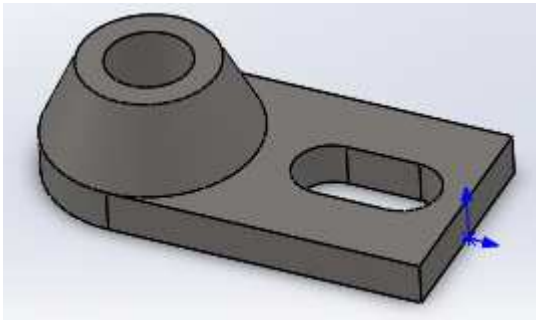
Step 2



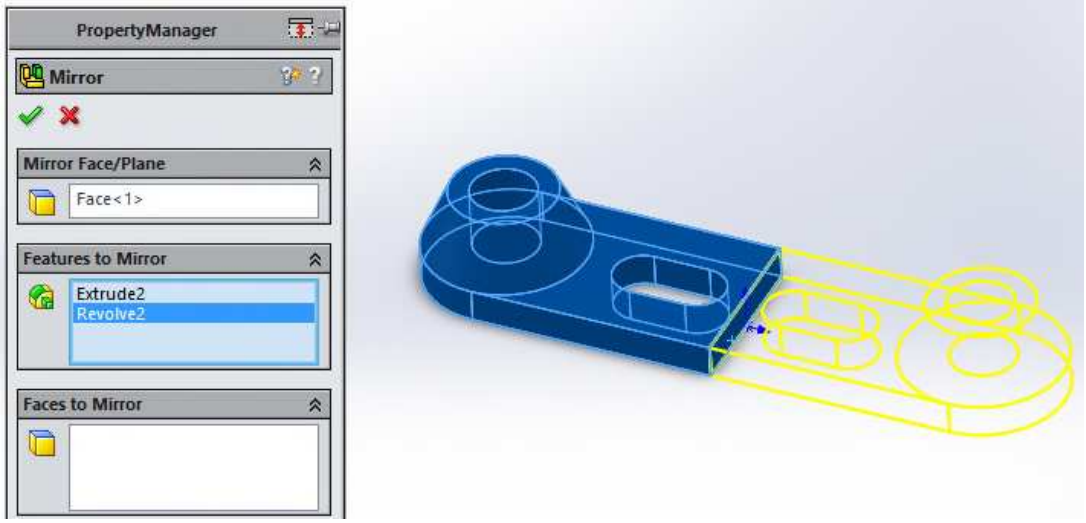
Step 3

Chapter 4: Part Modeling—CSWA Preparations

1. Problem 4-1

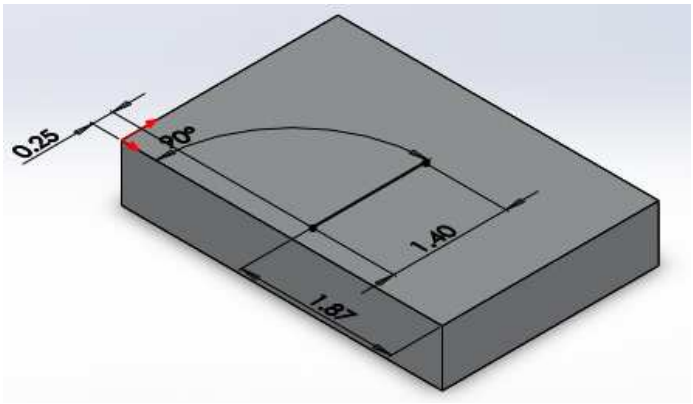


Step 1

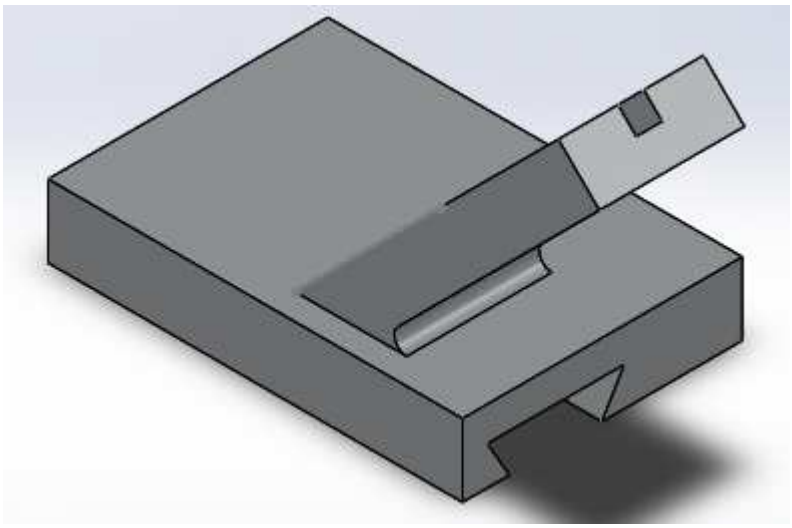


Step 2

2. Problem 4-2

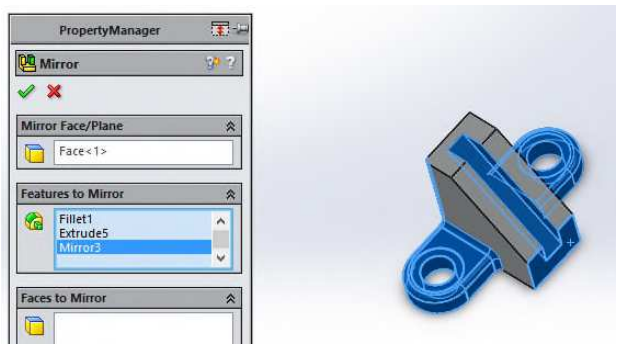


Step 1

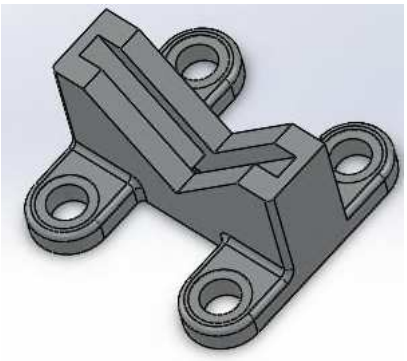


Step 2

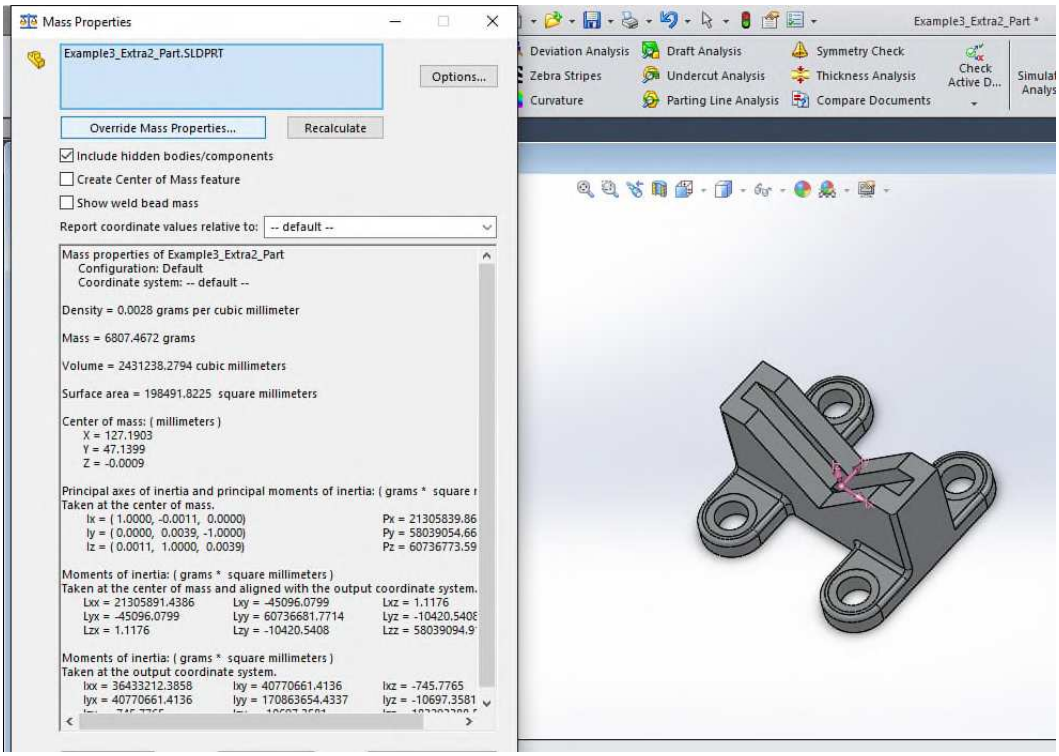
3. Problem 4-3



Step 1

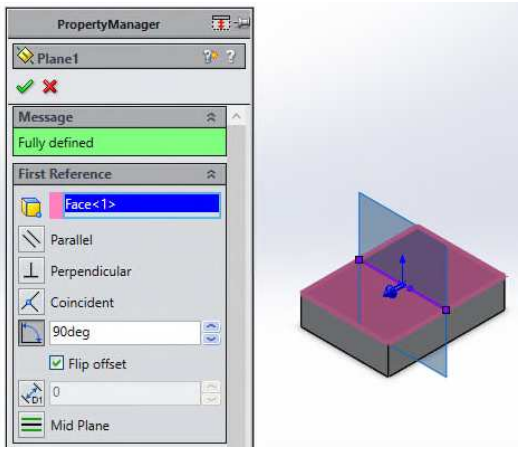


Step 2

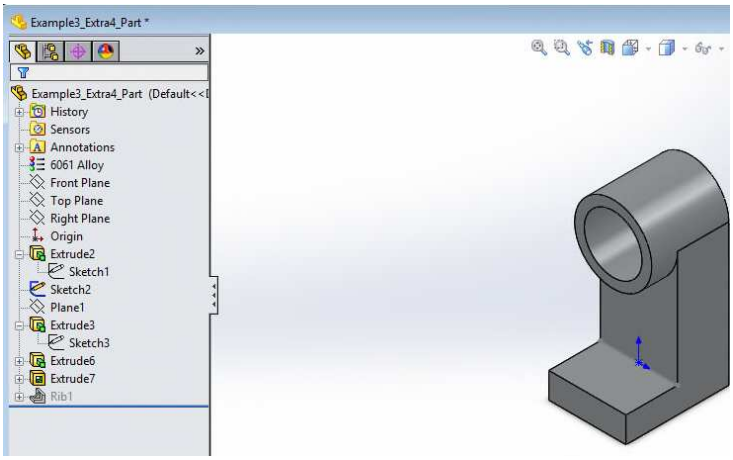


Step 3

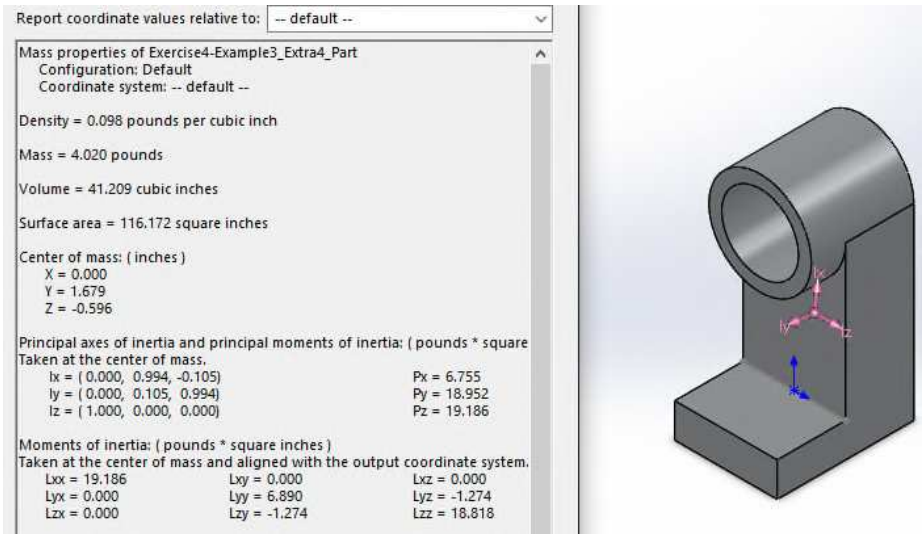
4. Problem 4-4



Step 1



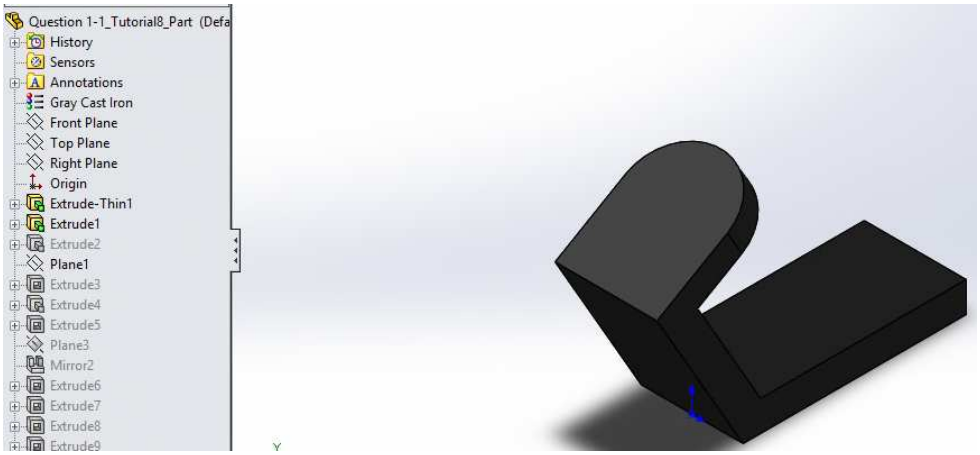
Step 2 [Note: rib is lost]



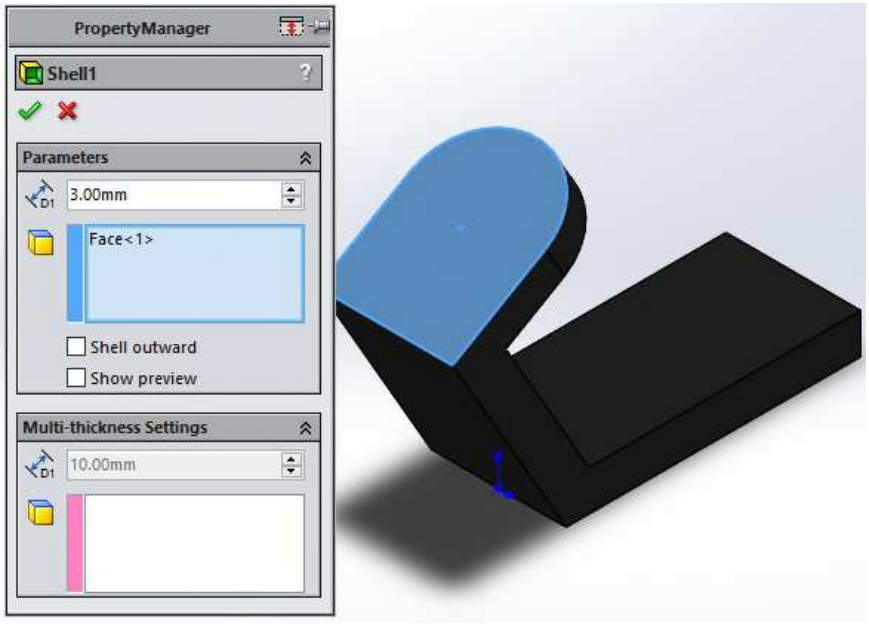
Step 3

Chapter 5: Part Modeling—CSWA Preparations

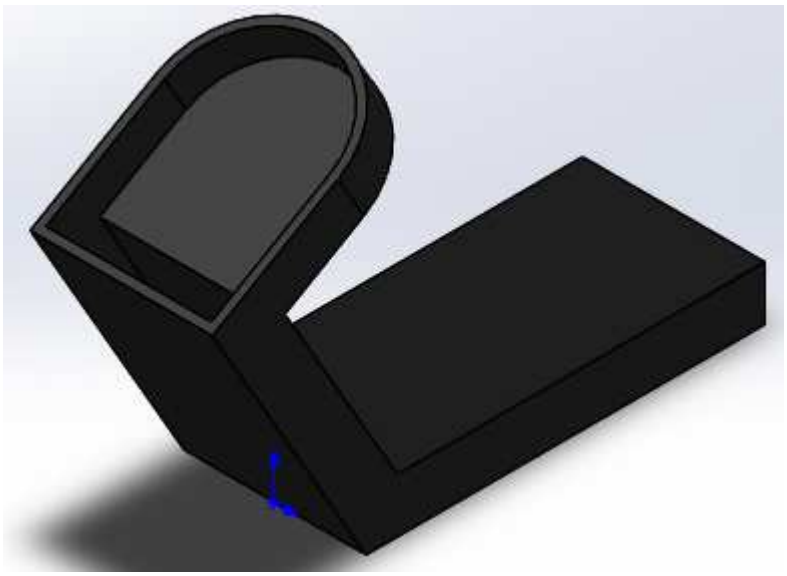
1. Problem 5-1



Step 1



Step 2



Step 3

Mass properties of Question 1-1_Tutorial8_Part
Configuration: Default
Coordinate system: -- default --

Density = 0.01 grams per cubic millimeter

Mass = 916.71 grams

Volume = 127321.34 cubic millimeters

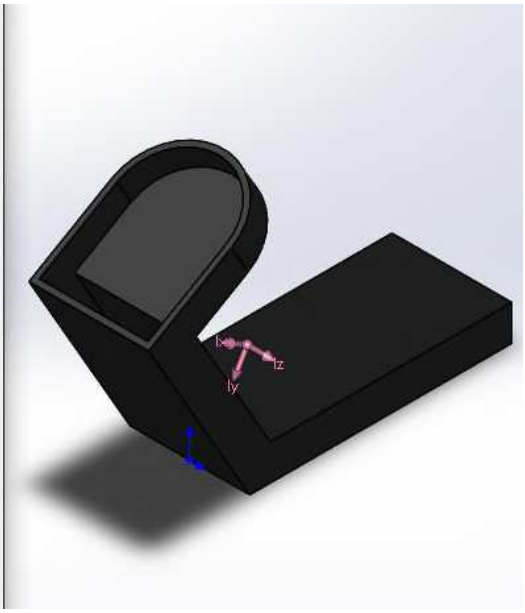
Surface area = 85680.49 square millimeters

Center of mass: (millimeters)
X = 0.00
Y = 38.08
Z = -30.63

Principal axes of inertia and principal moments of inertia: (grams * square
Taken at the center of mass.
Ix = (0.00, 0.50, 0.87) Px = 1044753.21
Iy = (0.00, -0.87, 0.50) Py = 3817601.18
Iz = (1.00, 0.00, 0.00) Pz = 4052969.20

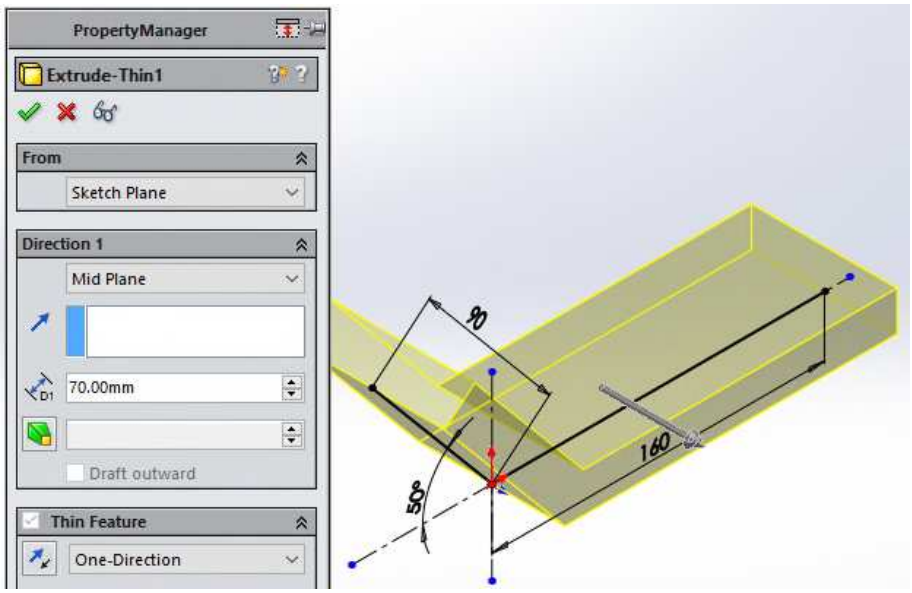
Moments of inertia: (grams * square millimeters)
Taken at the center of mass and aligned with the output coordinate system.
Lxx = 4052969.20 Lxy = 0.00 Lxz = 0.00
Lyx = 0.00 Lyy = 3136860.11 Lyz = 1193391.42
Lzx = 0.00 Lzy = 1193391.42 Lzz = 1725494.28

Moments of inertia: (grams * square millimeters)
Taken at the output coordinate system.
Ixx = 6242390.44 Ixy = 0.00 Ixz = 0.00
Iyx = 0.00 Iyy = 3996764.09 Iyz = 124159.37

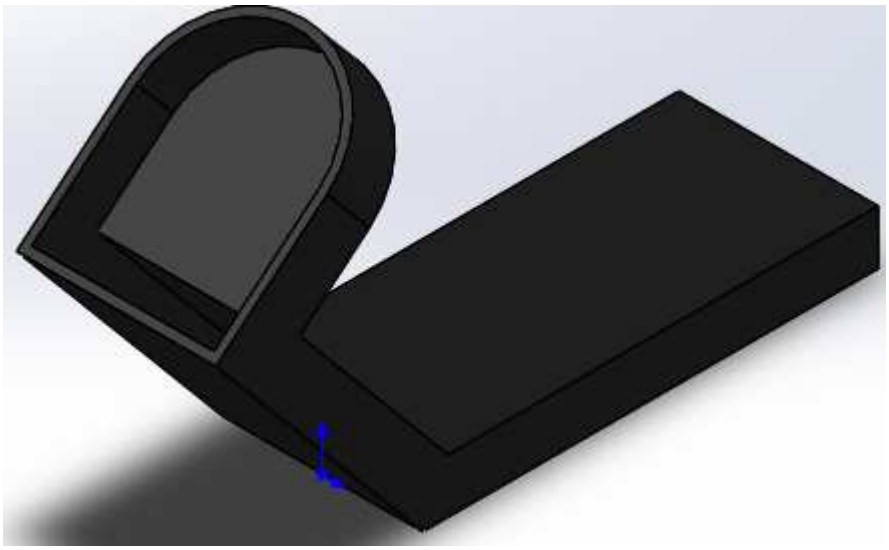


Step 4

2. Problem 5-2



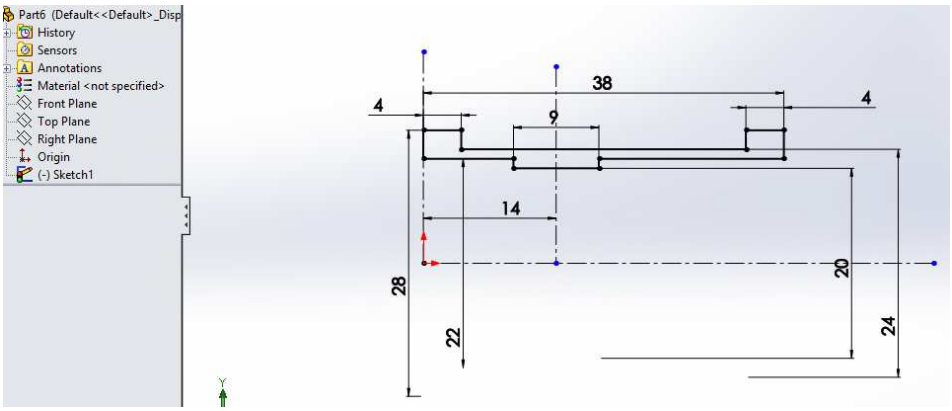
Step 1



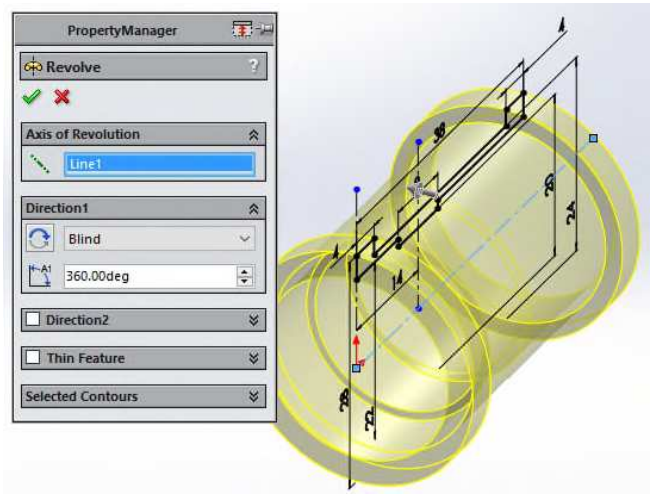
Step 2

Projects

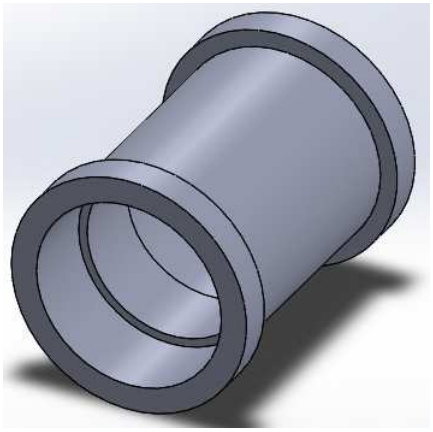
3. P1



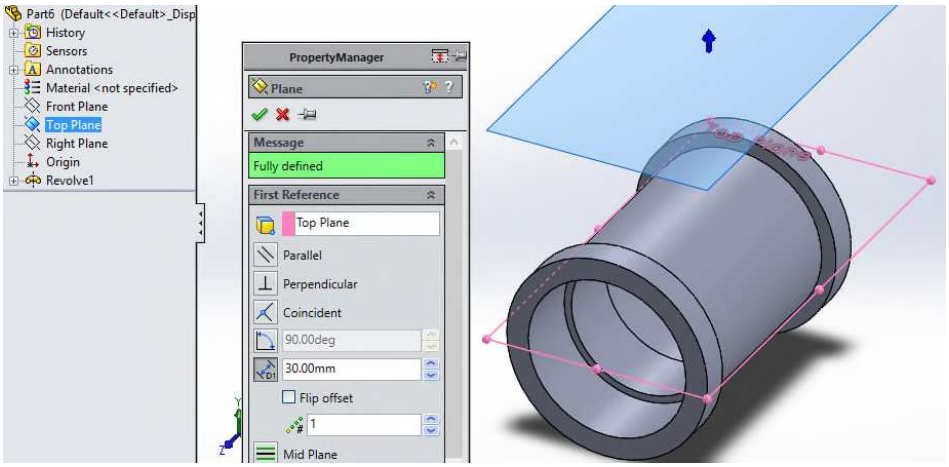
Step 1



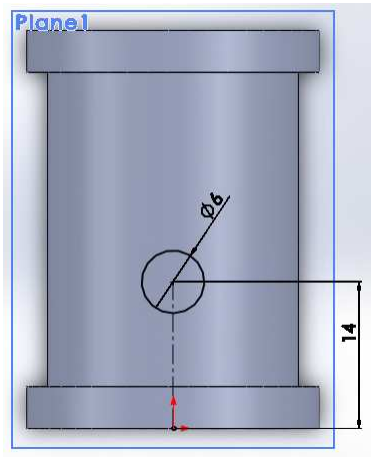
Step 2



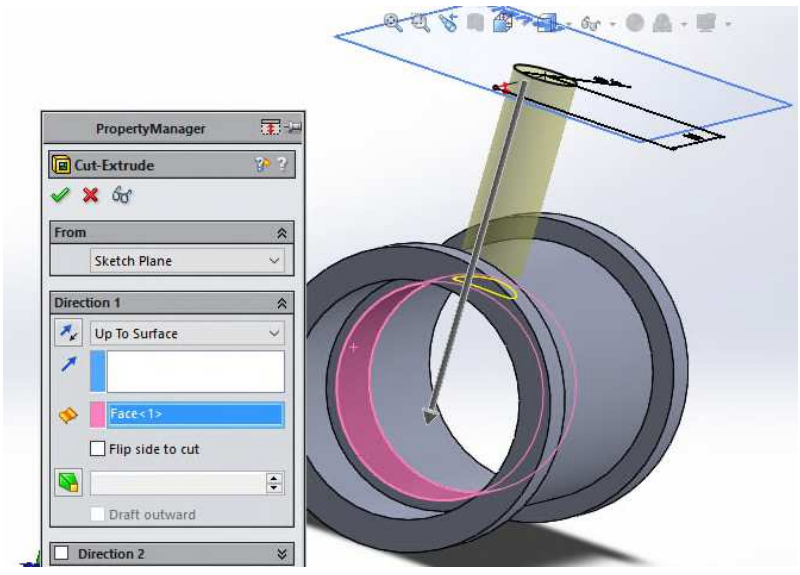
Step 3



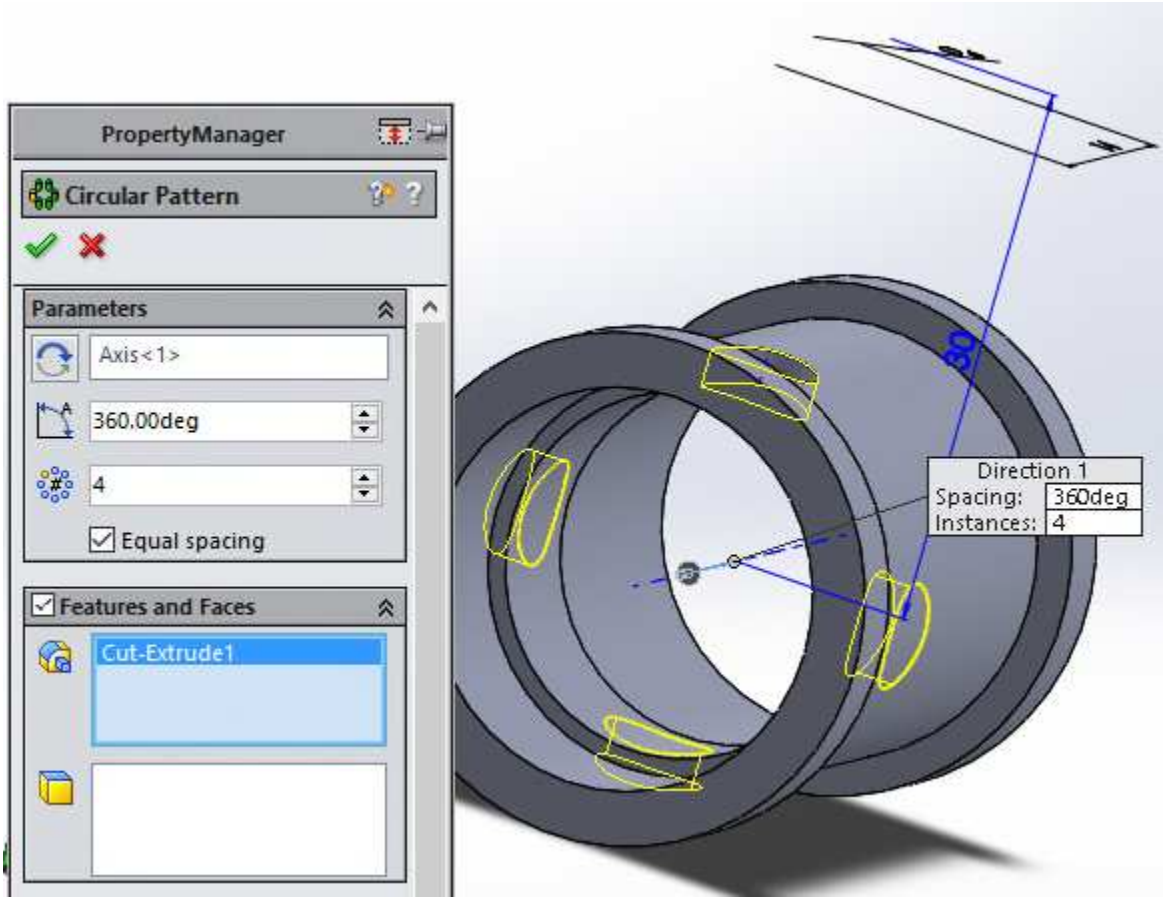
Step 4



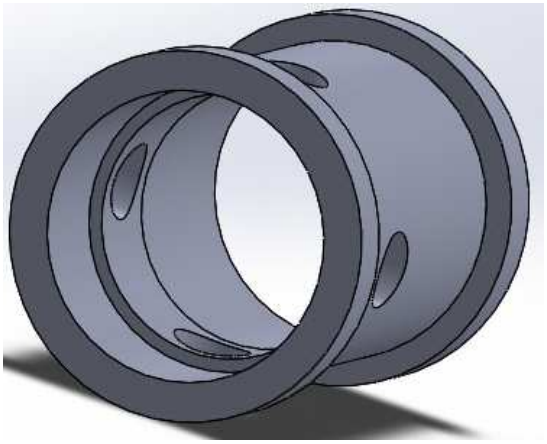
Step 5



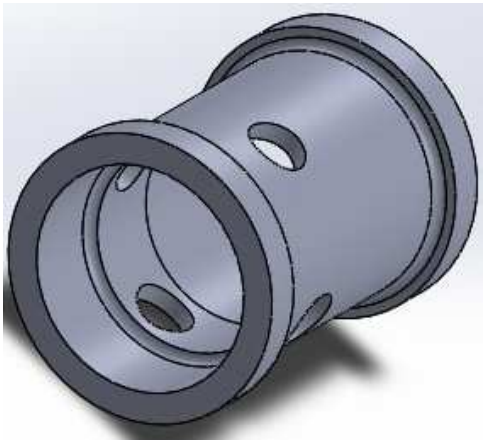
Step 6



Step 7

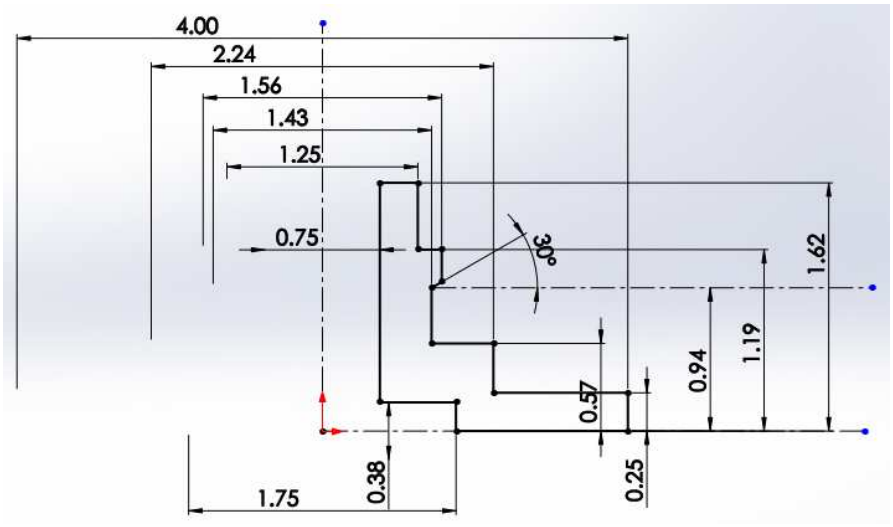


Step 8

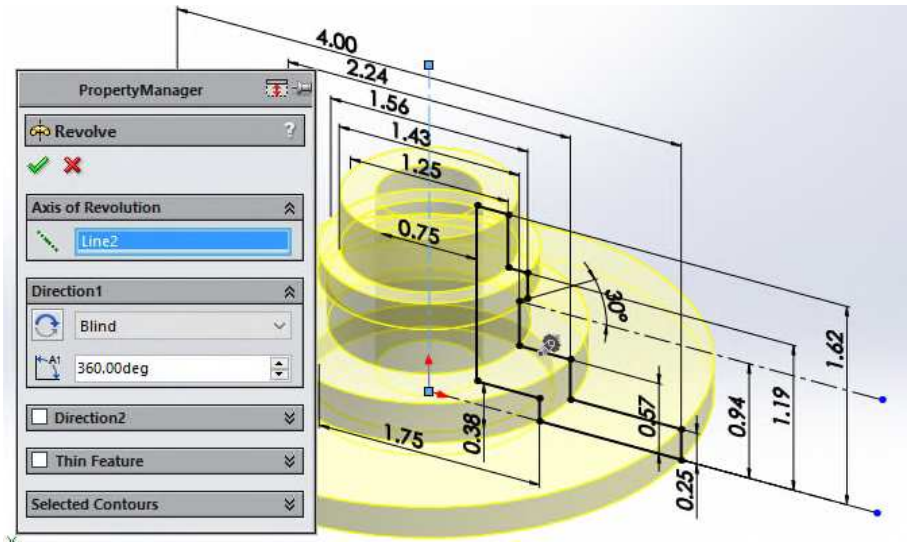


Step 9

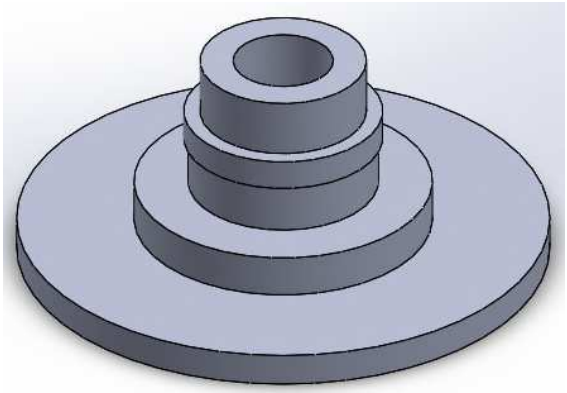
4. P2



Step 1

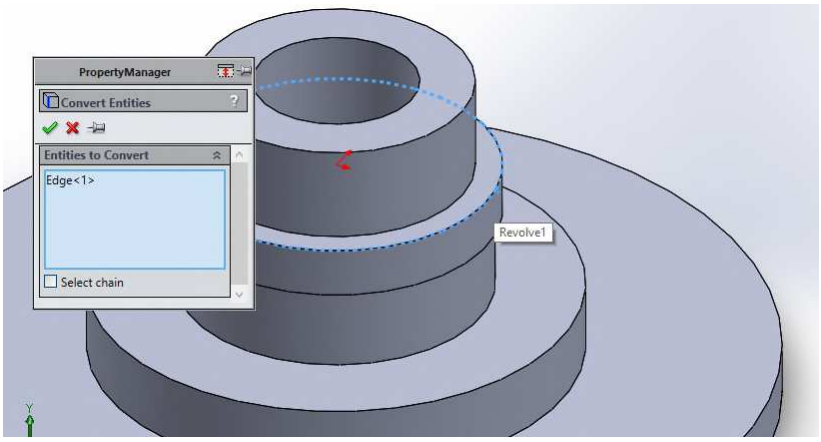


Step 2

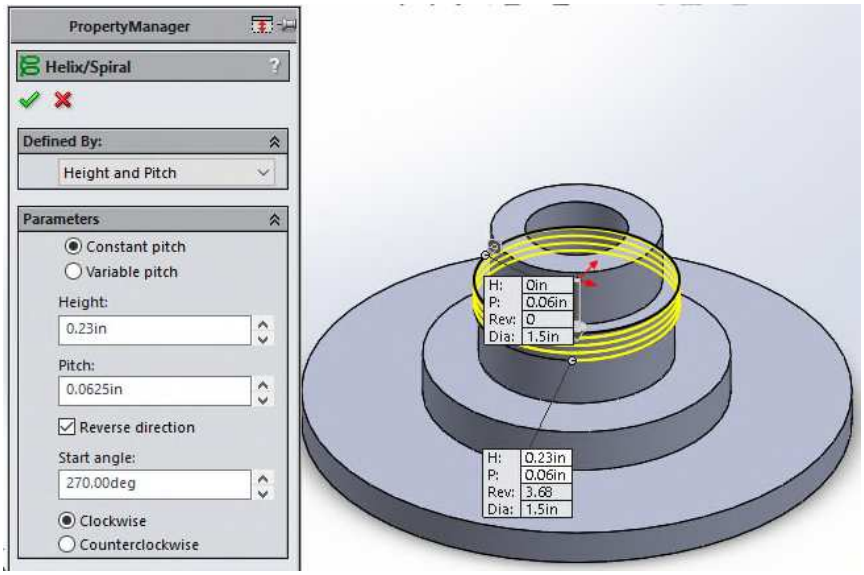


Step 3

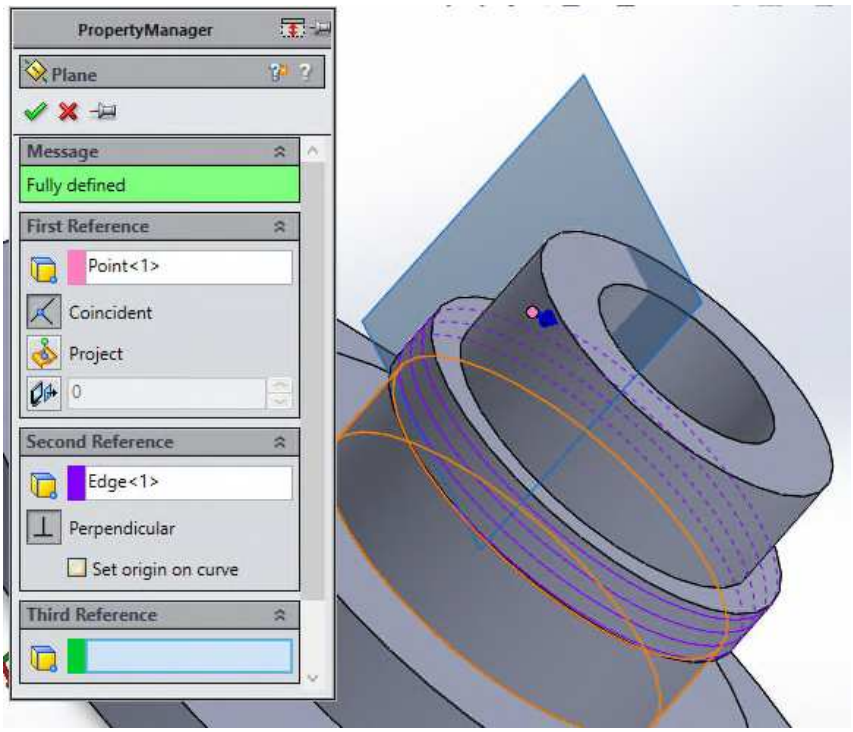
Use all formulas in chapter 30 for design of external threads; note that the diameter of 1.56 will reduce to 1.49.



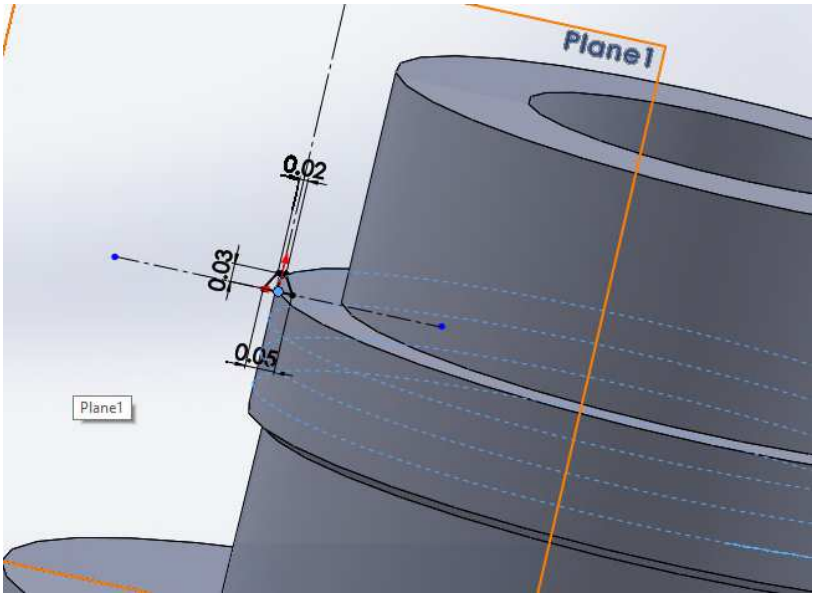
Step 4



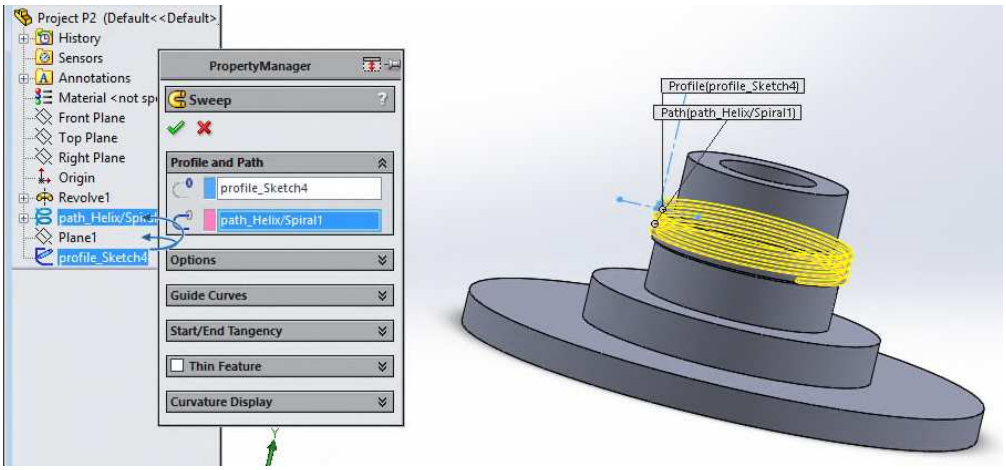
Step 5



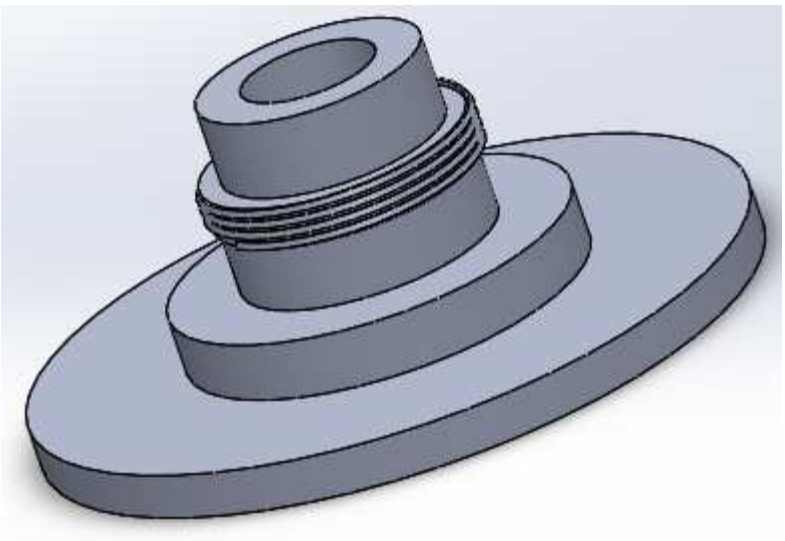
Step 6



Step 7

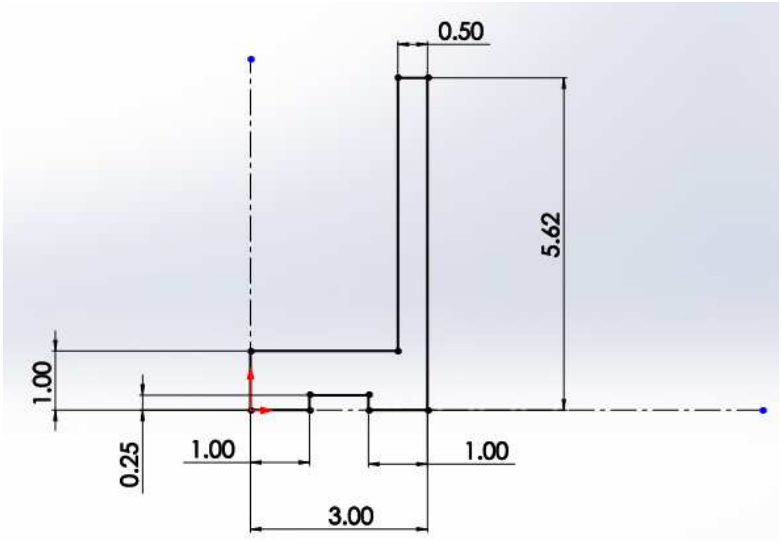


Step 8

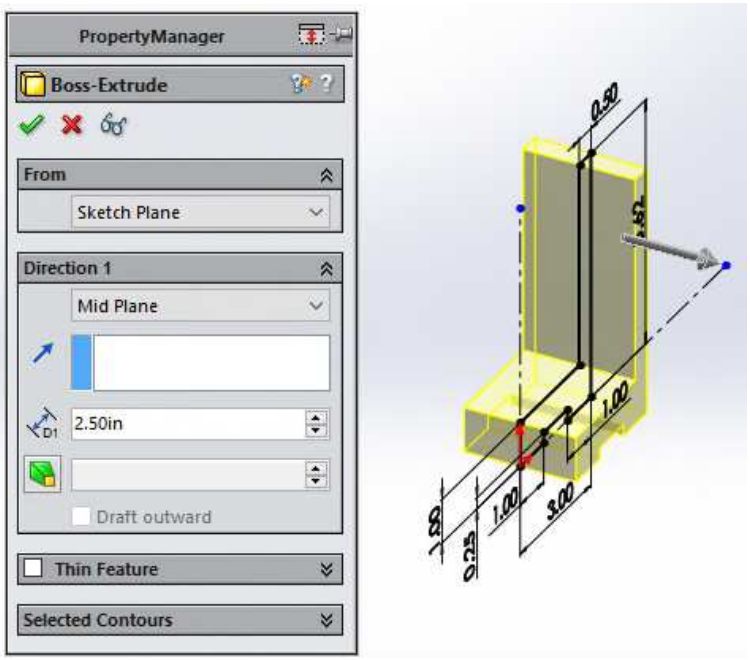


Step 9

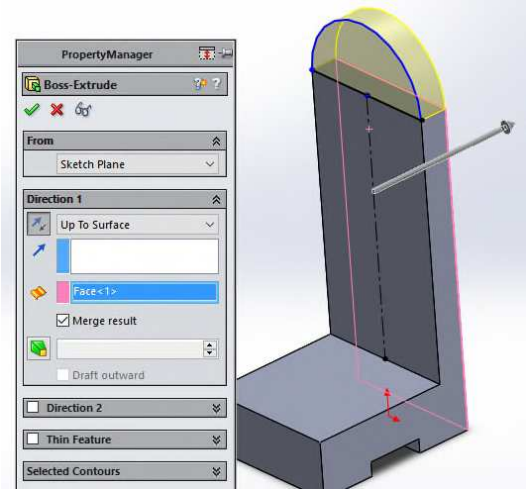
5. P2



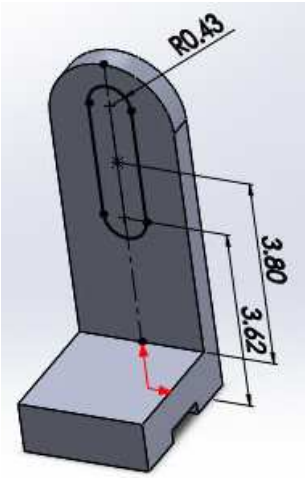
Step 1



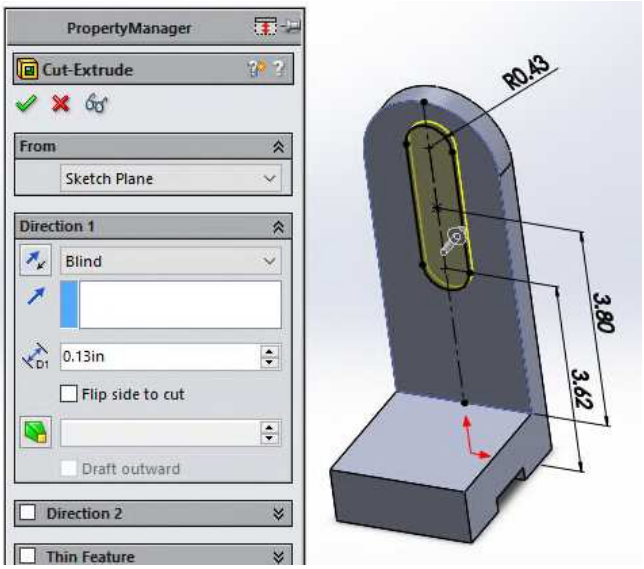
Step 2



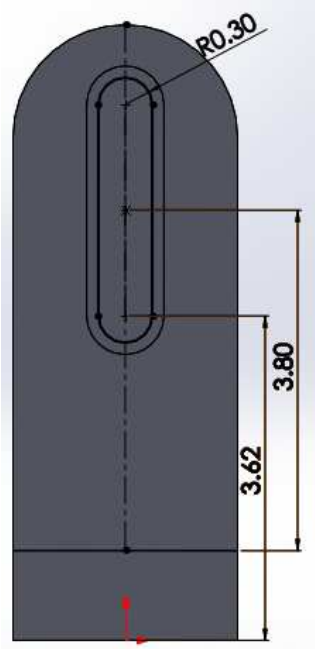
Step 3



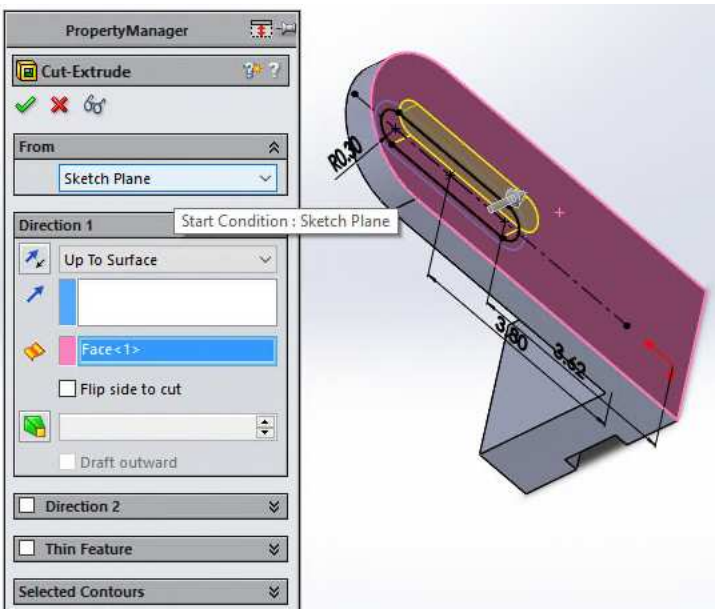
Step 4



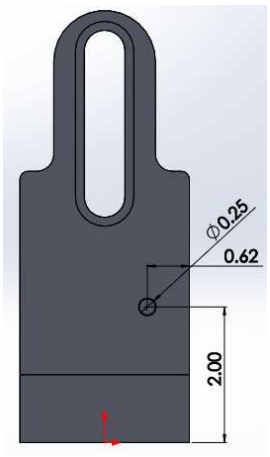
Step 5



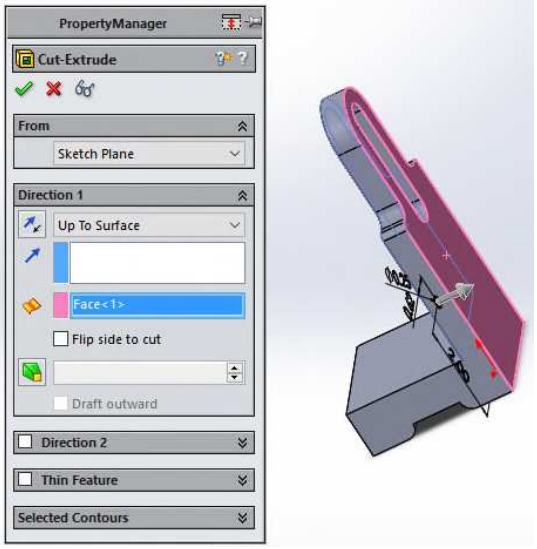
Step 6



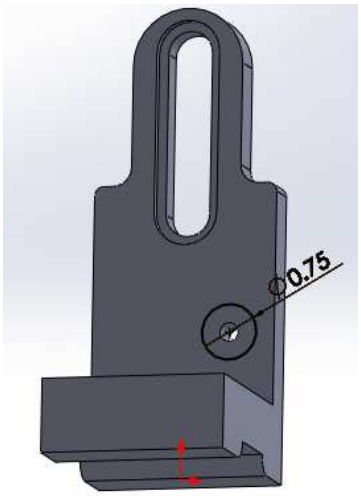
Step 7



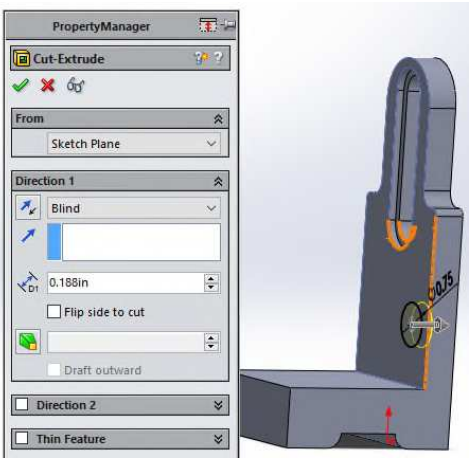
Step8



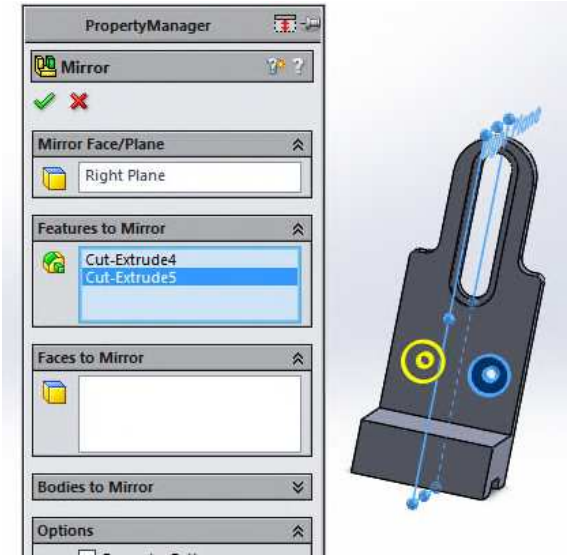
Step9



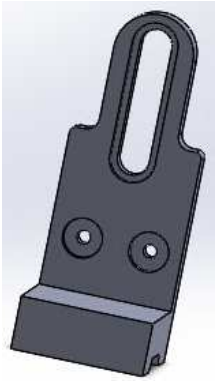
Step10



Step 11



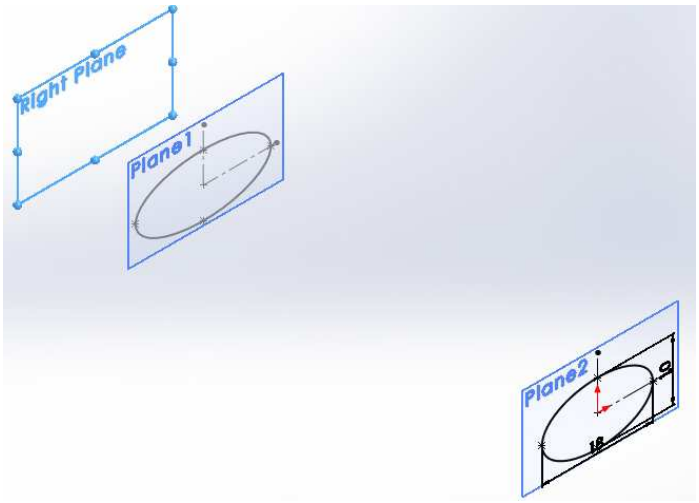
Step 12



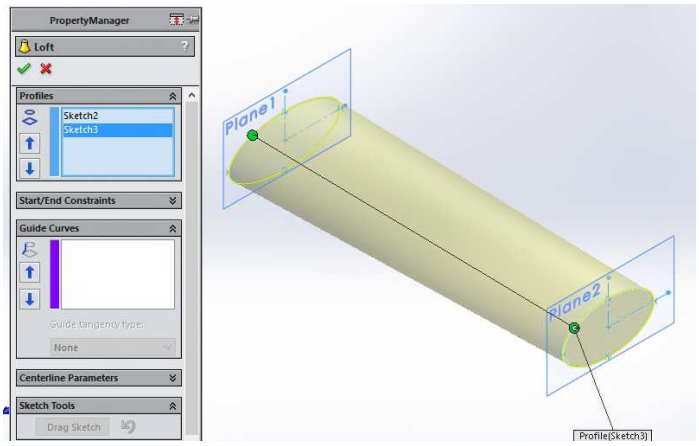
Step 13

Chapter 6: Creating Revolved, Swept, and Lofted Parts

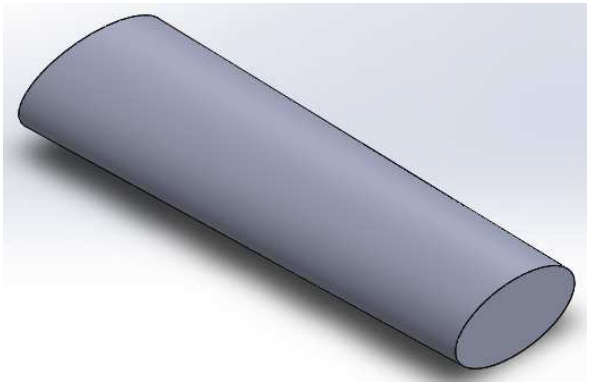
1. Problem 6-1



Step 1



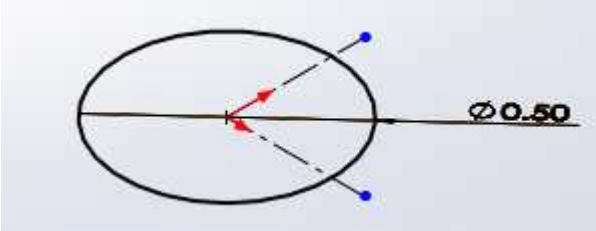
Step 2



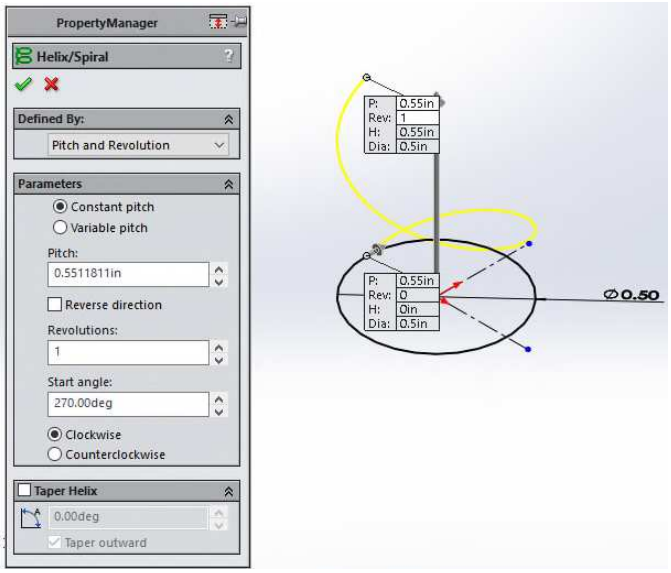
Step 3

Step4: Use Circular Pattern tool to replicate 4 times (see Figure 6-91)

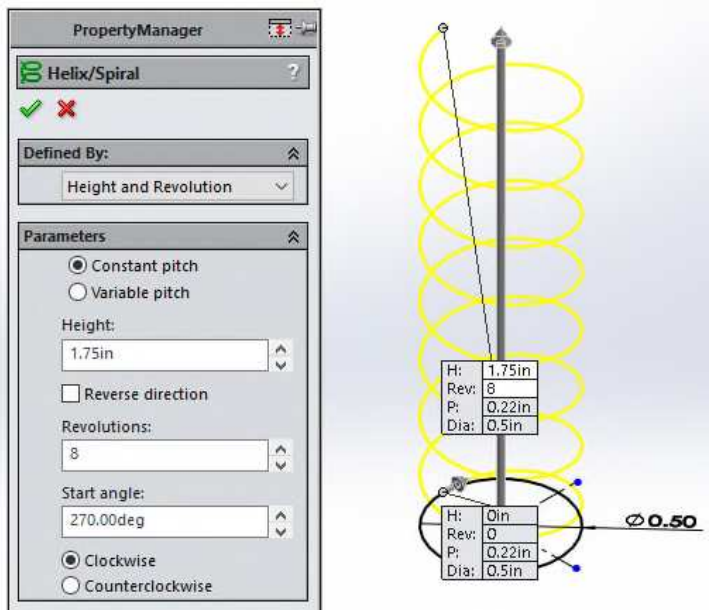
2. Problem 6-2



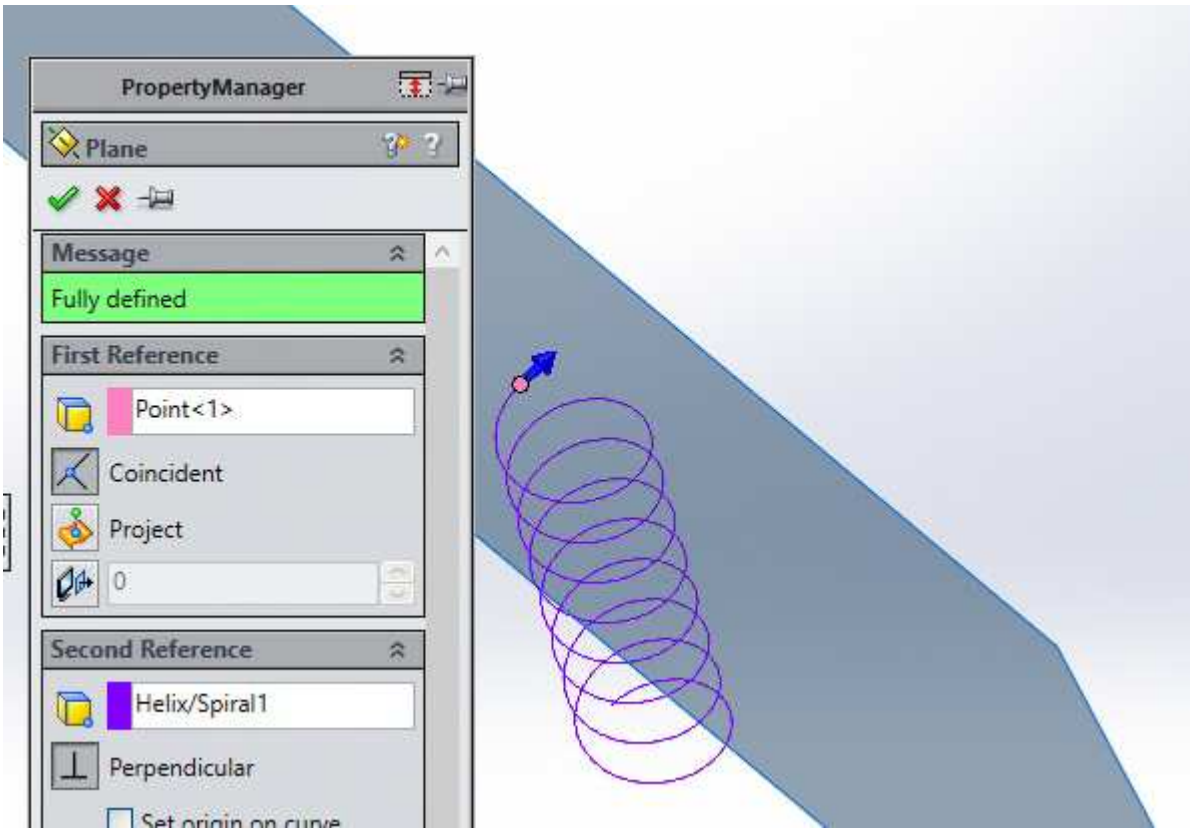
Step 1



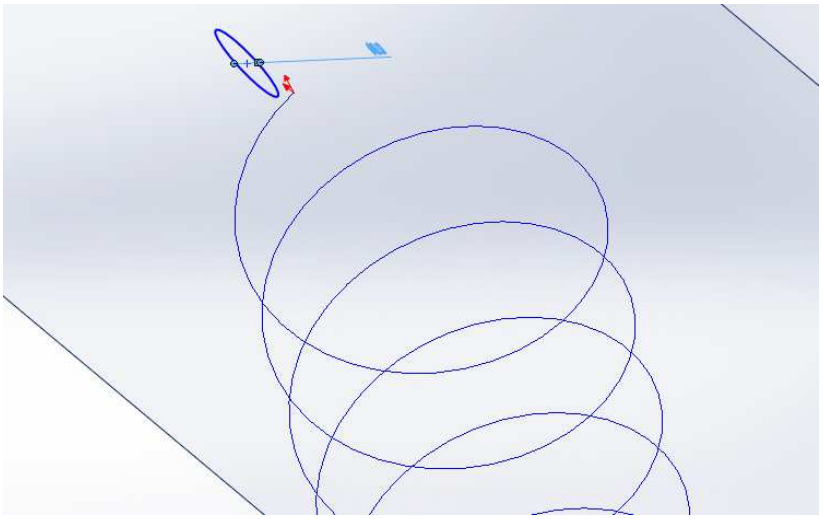
Step 2



Step 3



Step 4



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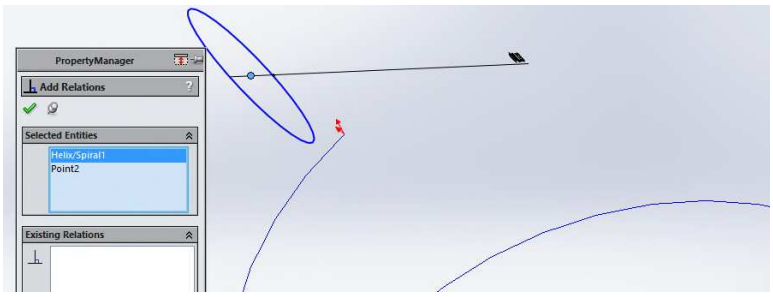
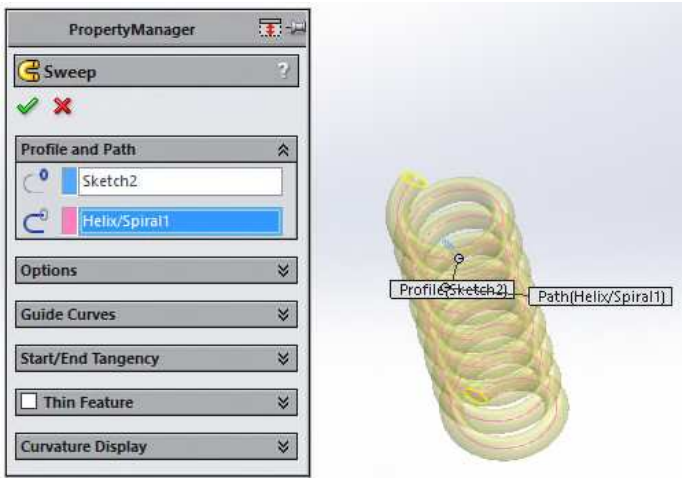
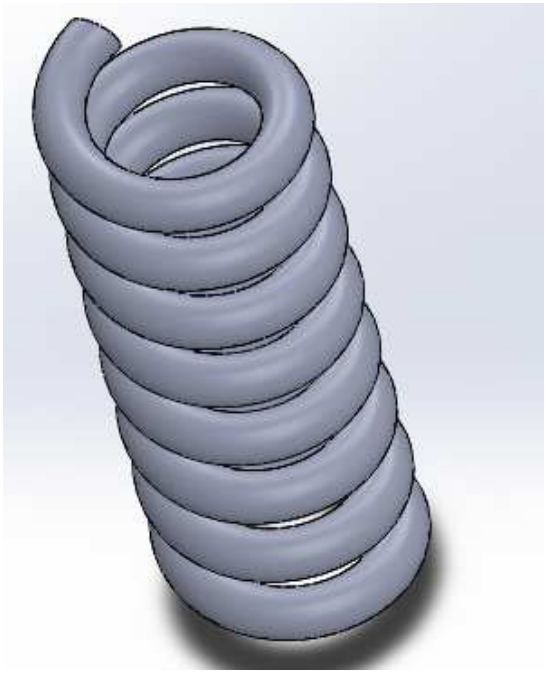


Step 6

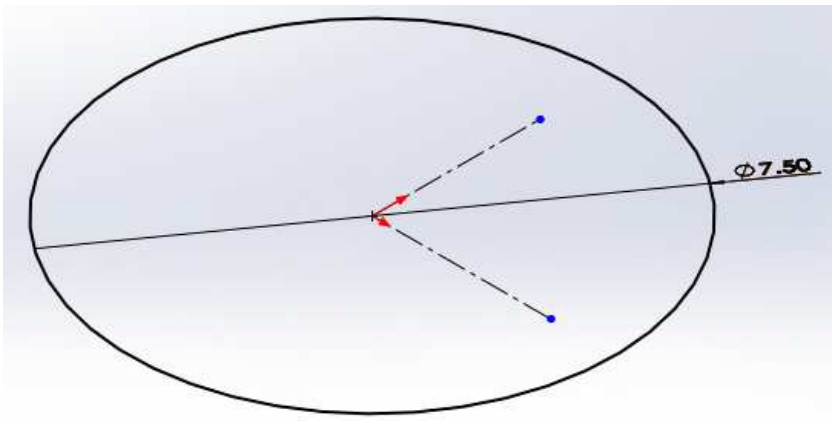


Step 7

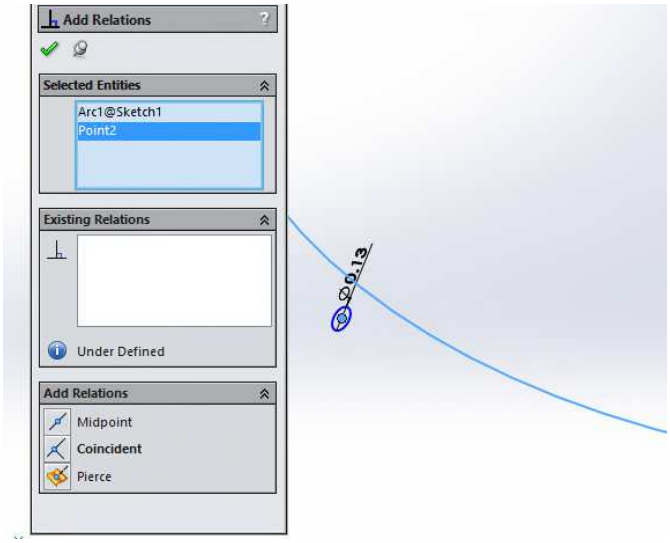


Step 8

3. Problem 6-3



Step 1



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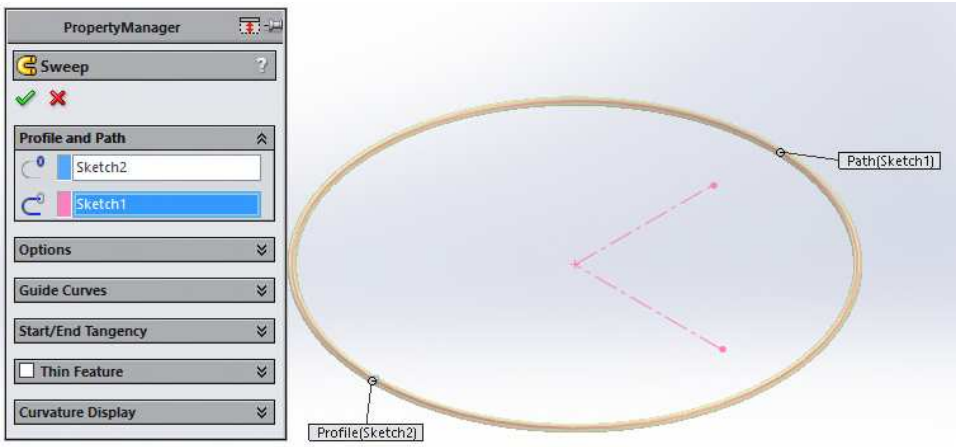
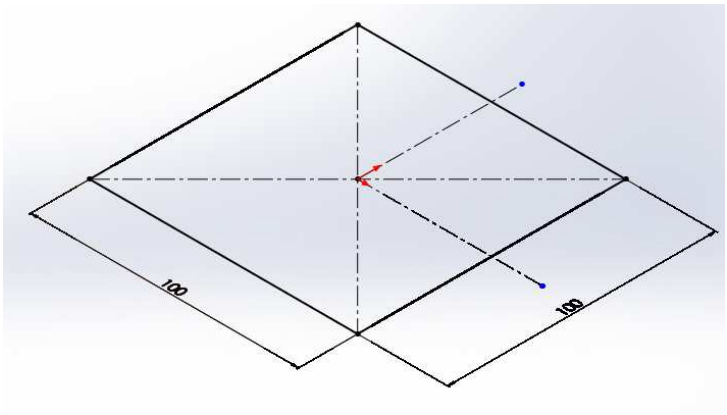


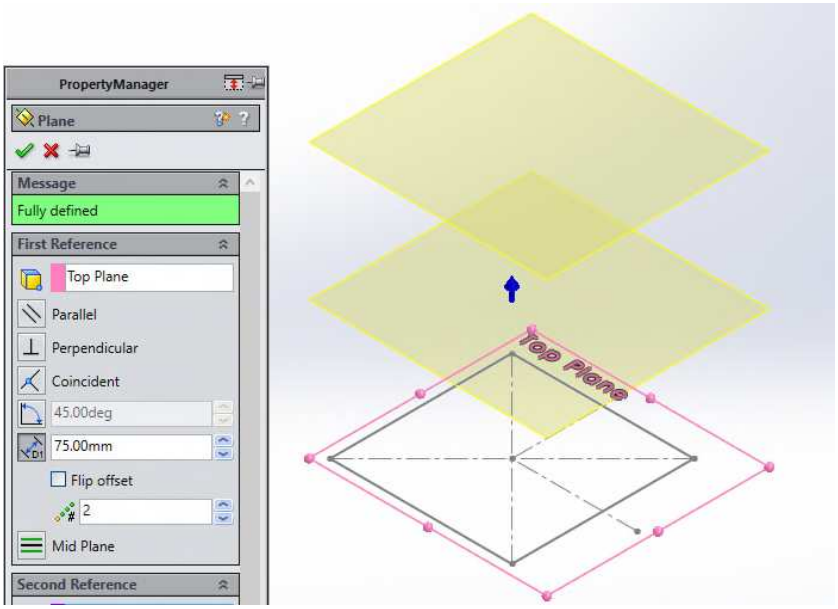
Step 3

Step 4

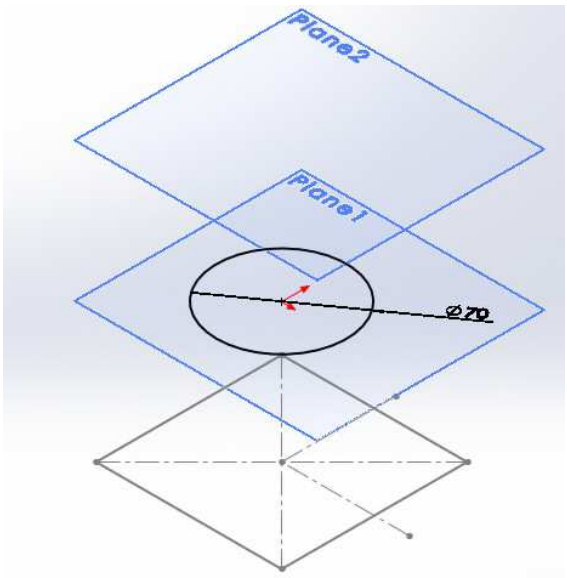
4. Problem 6-4



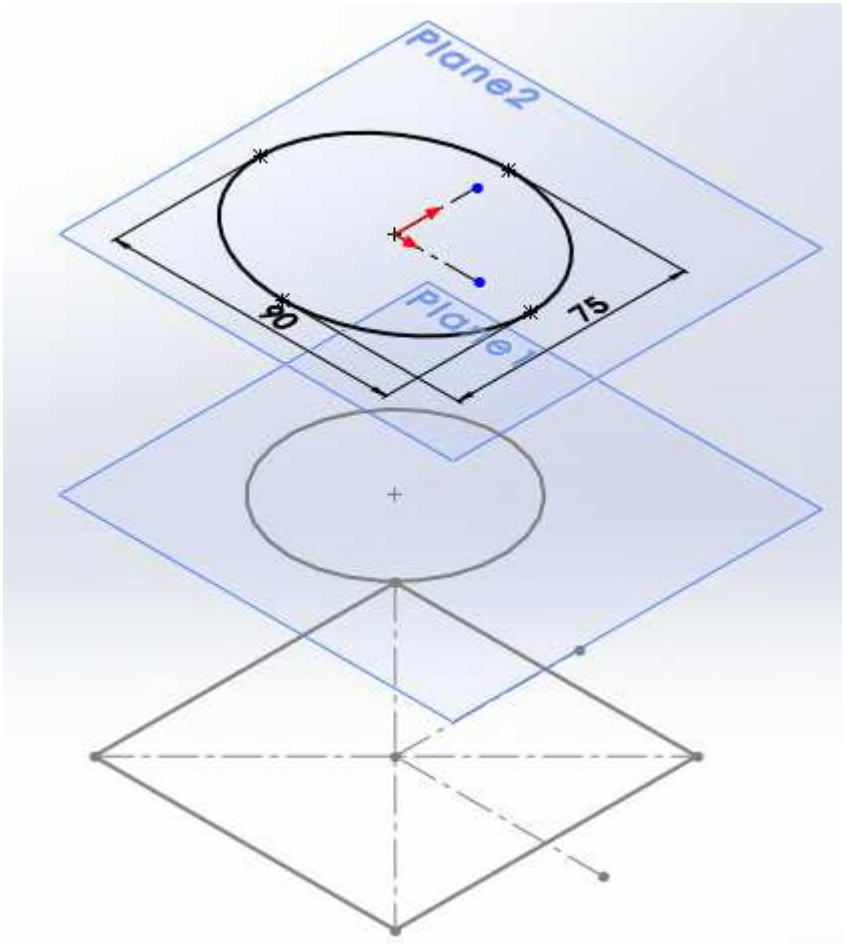
Step 1



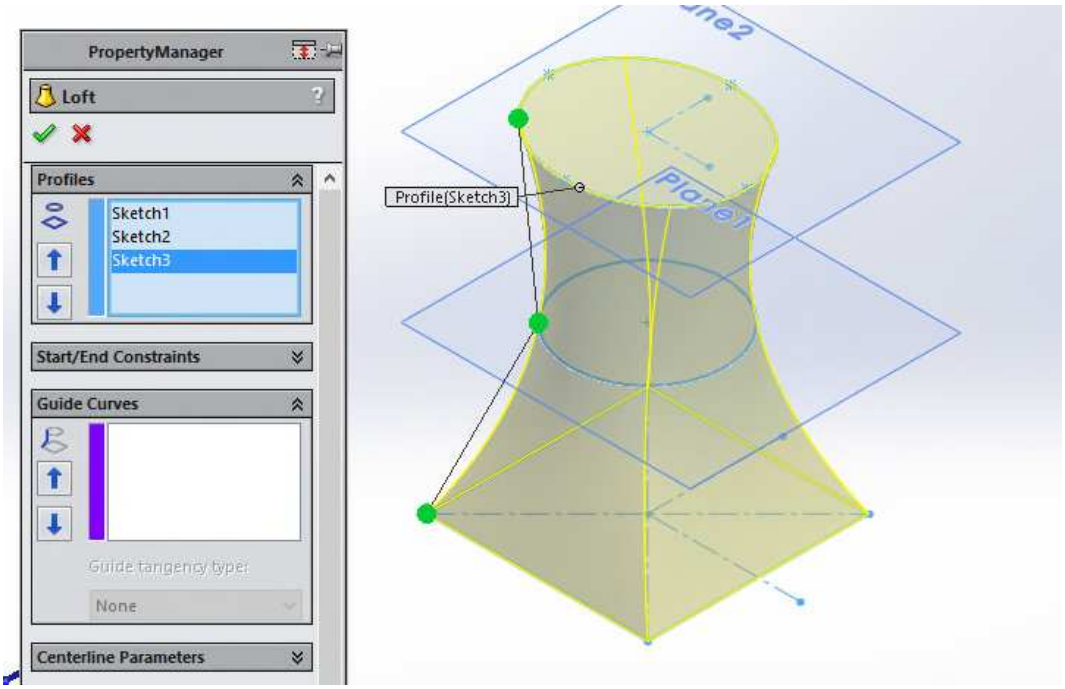
Step 2



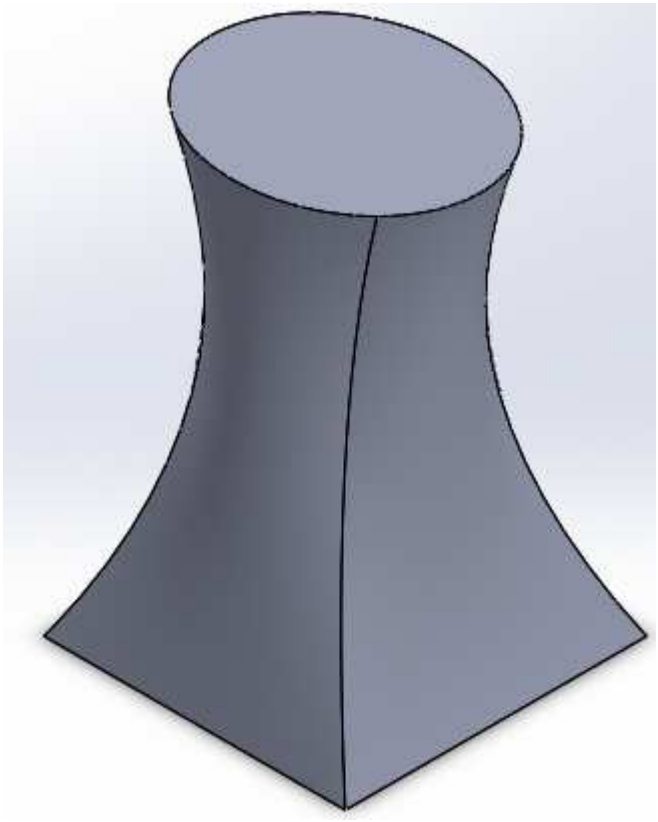
Step 3



Step 4



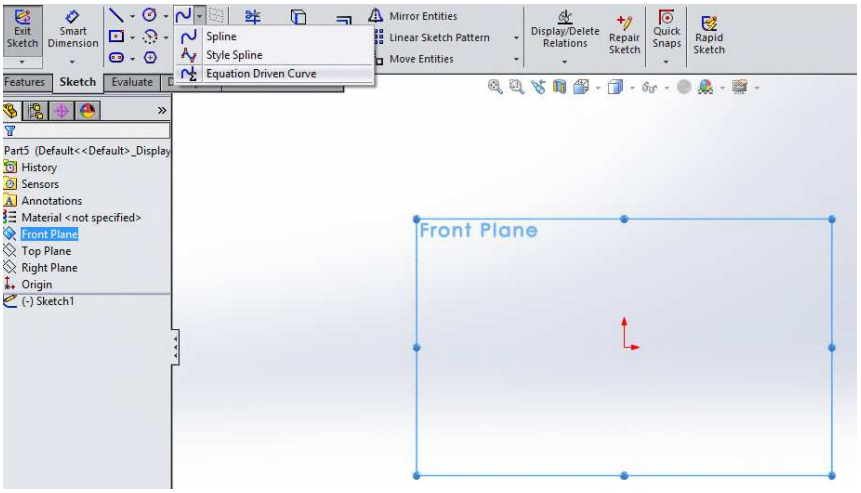
Step 5



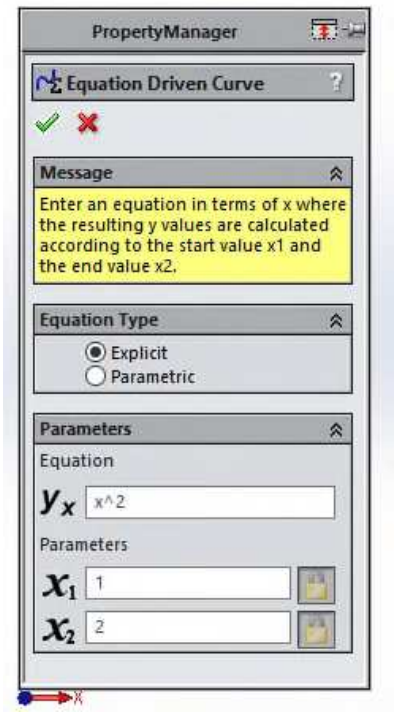
Step 6

Chapter 7: Part Modeling with Equation Driven Curves

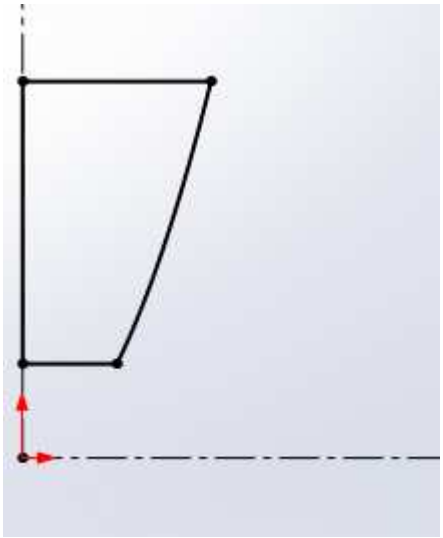
1. Problem 7-1



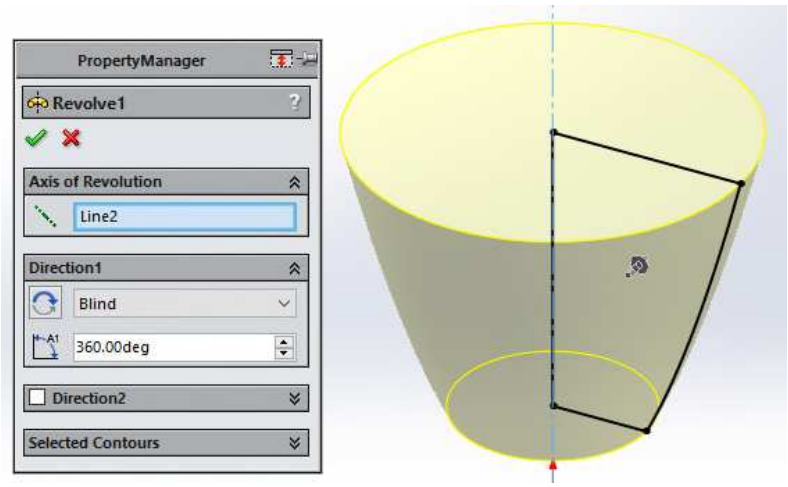
Step 1



Step 2



Step 3



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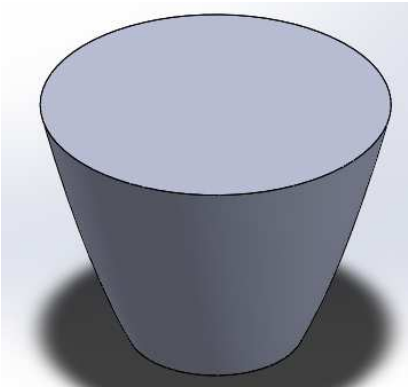
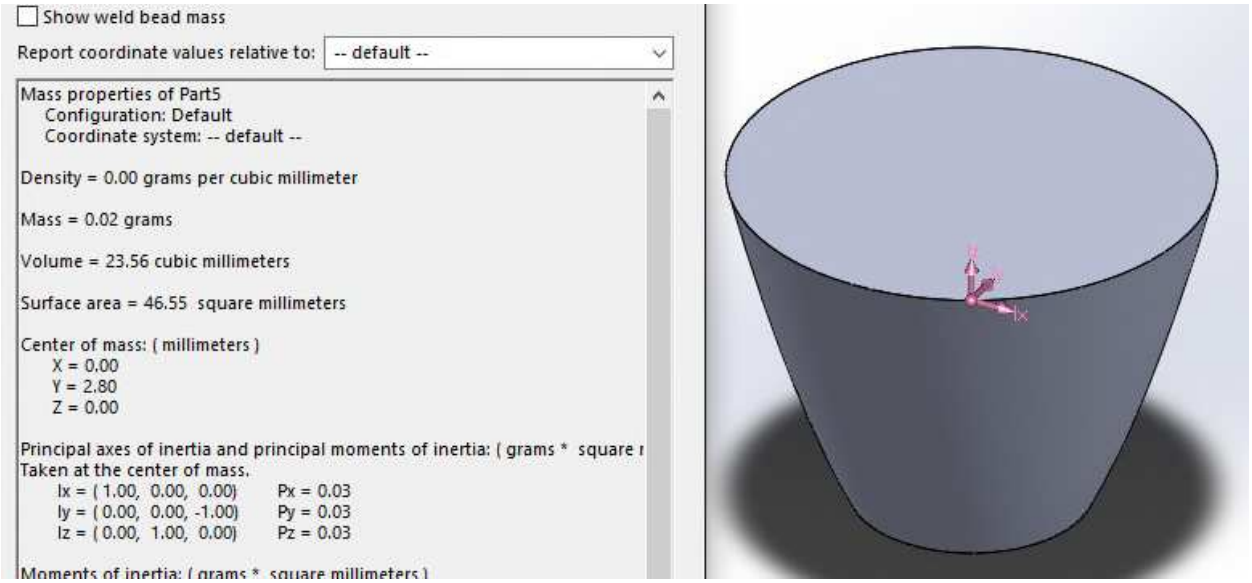
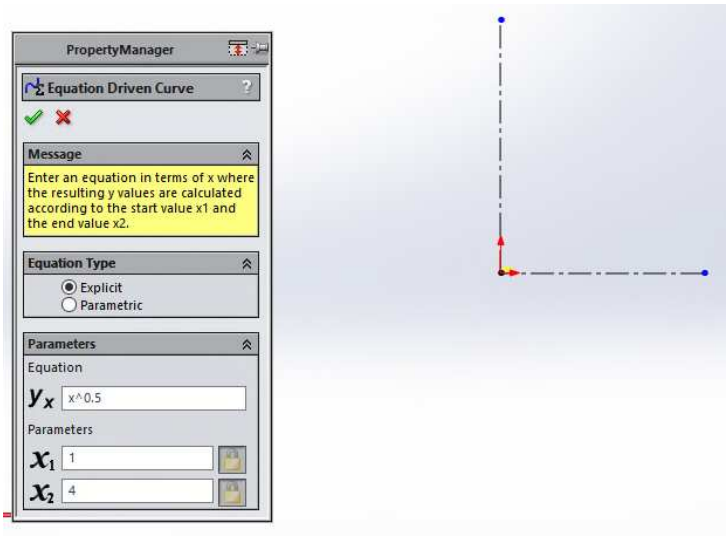


Step 5

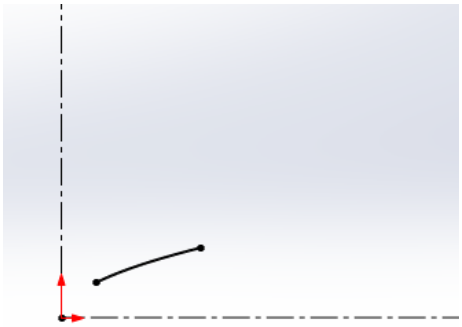


Step 6

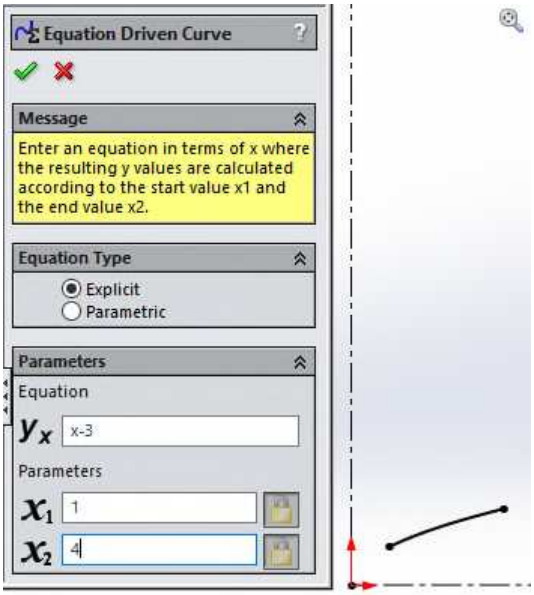
2. Problem 7-2



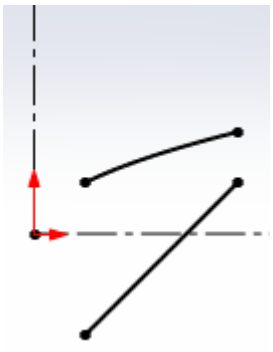
Step 1



Step 2



Step 3



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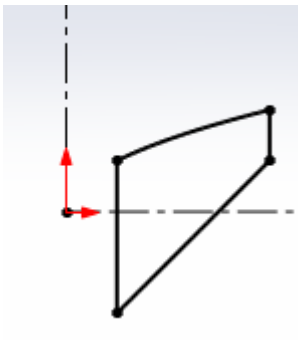
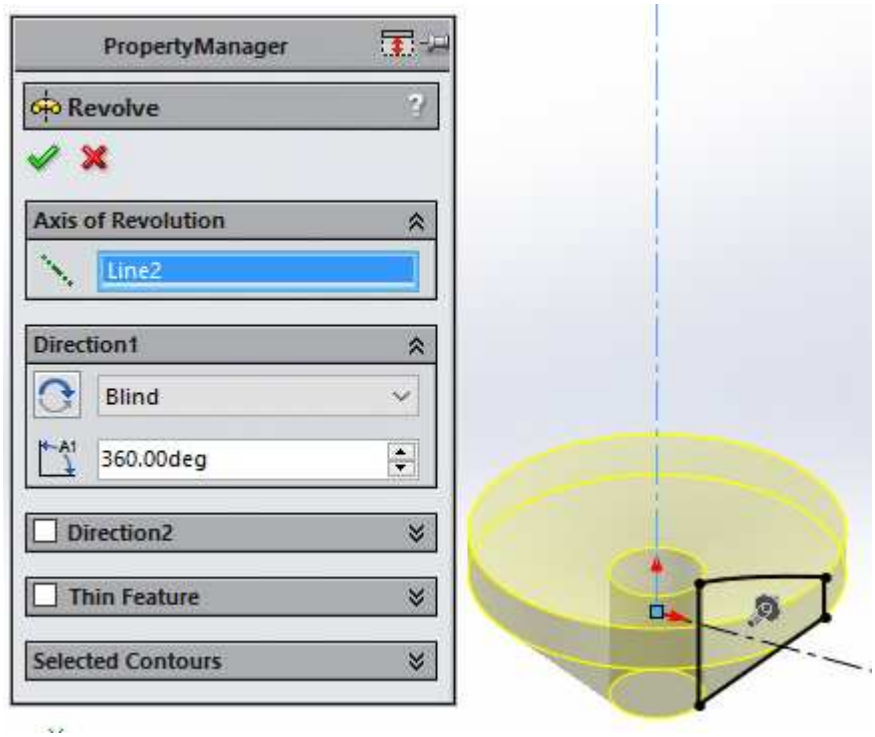
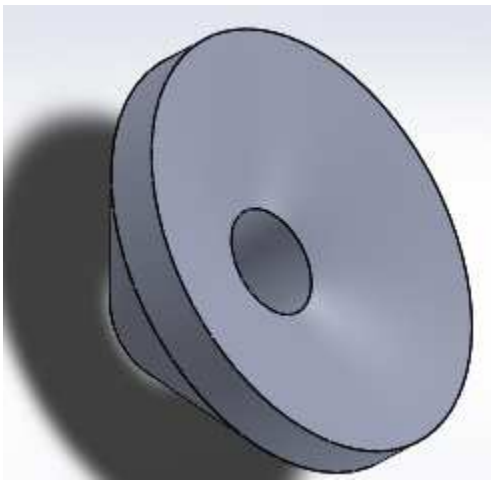


Step 5

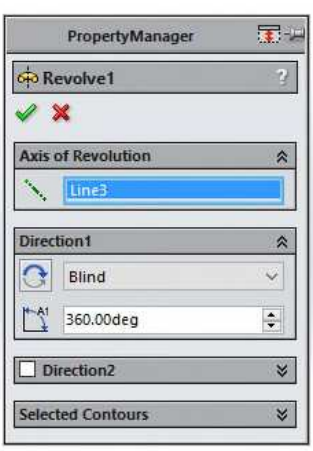


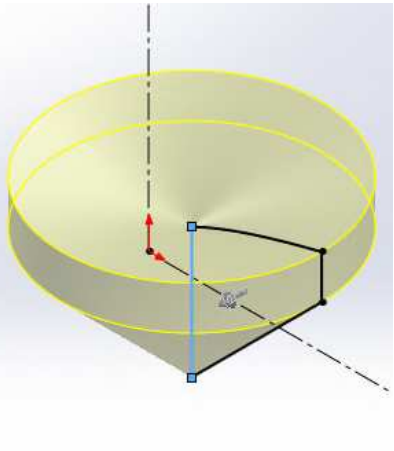
Step 6



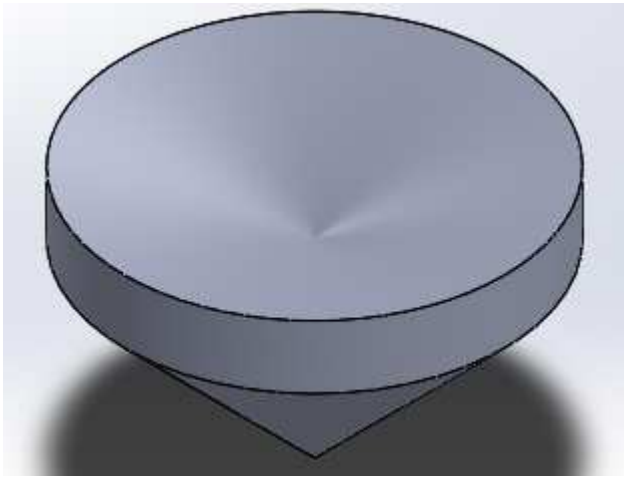
Step 7

3. Problem 7-3



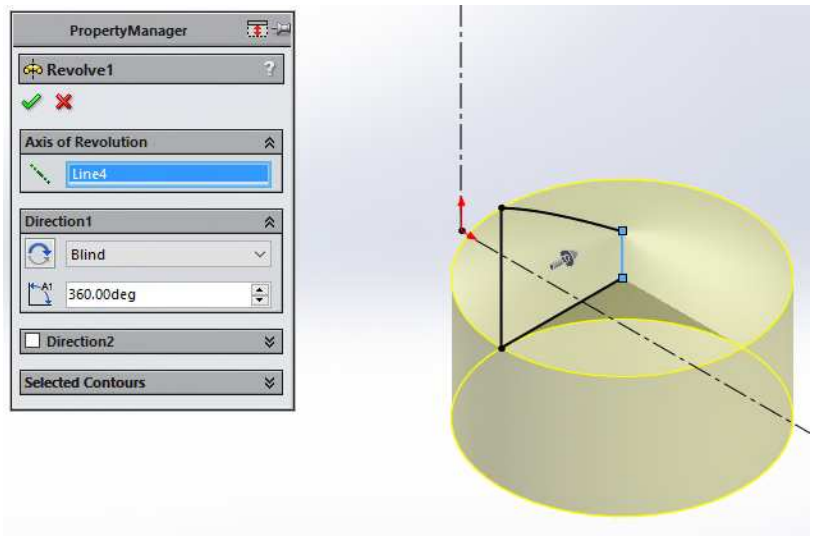


Step 1

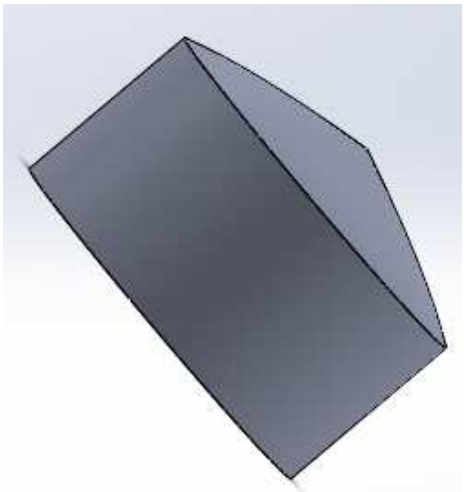


Step 2

4. Problem 7-4



Step 1



Step 2

5. Problem 7-5

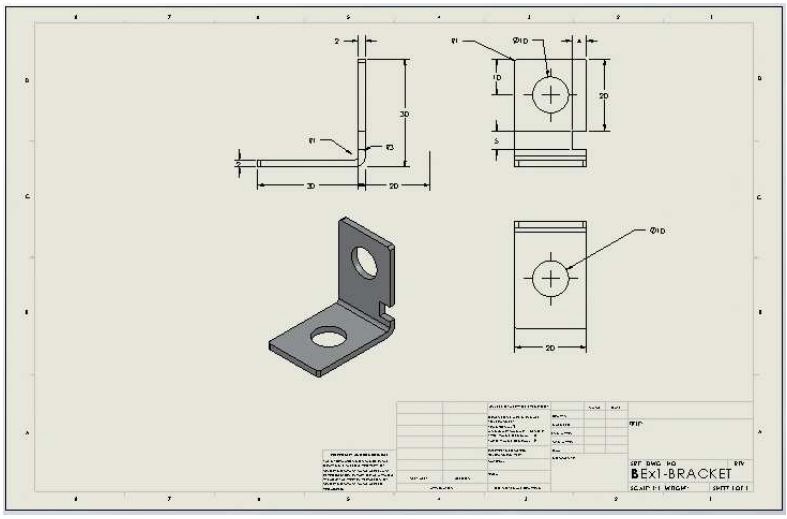
Question 2
Volume = 87.36 cubic millimeters
Surface area = 160.04 square millimeters

Question 3
Volume = 48.60 cubic millimeters
Surface area = 88.35 square millimeters

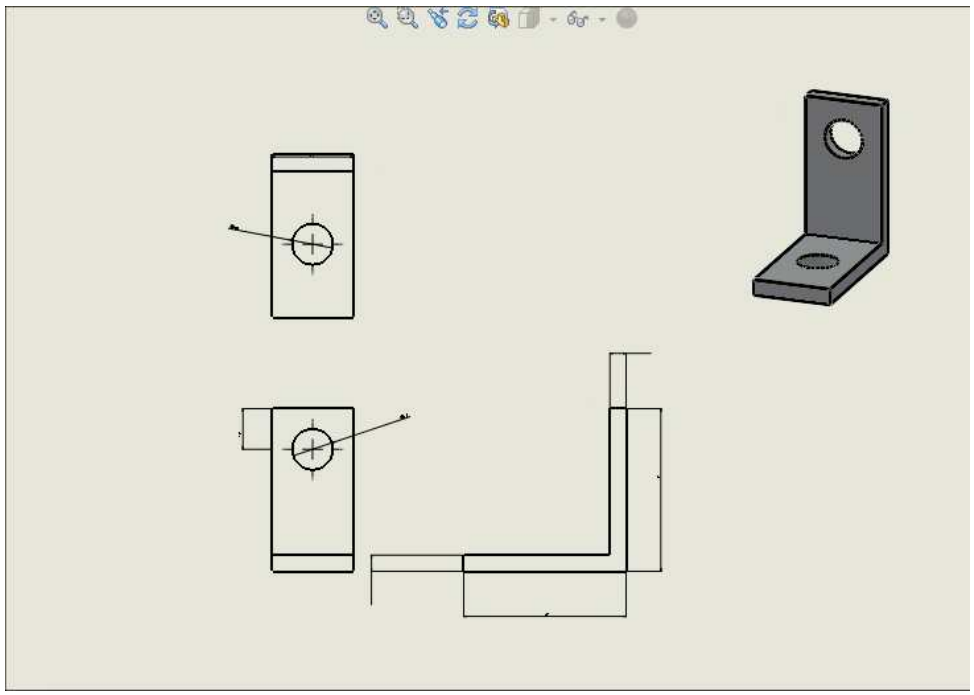
Question 4
Volume = 67.64 cubic millimeters
Surface area = 126.73 square millimeters

Chapter 9: Part and Assembly Drawings—CSWA Preparations

1. **Problem 9-1**



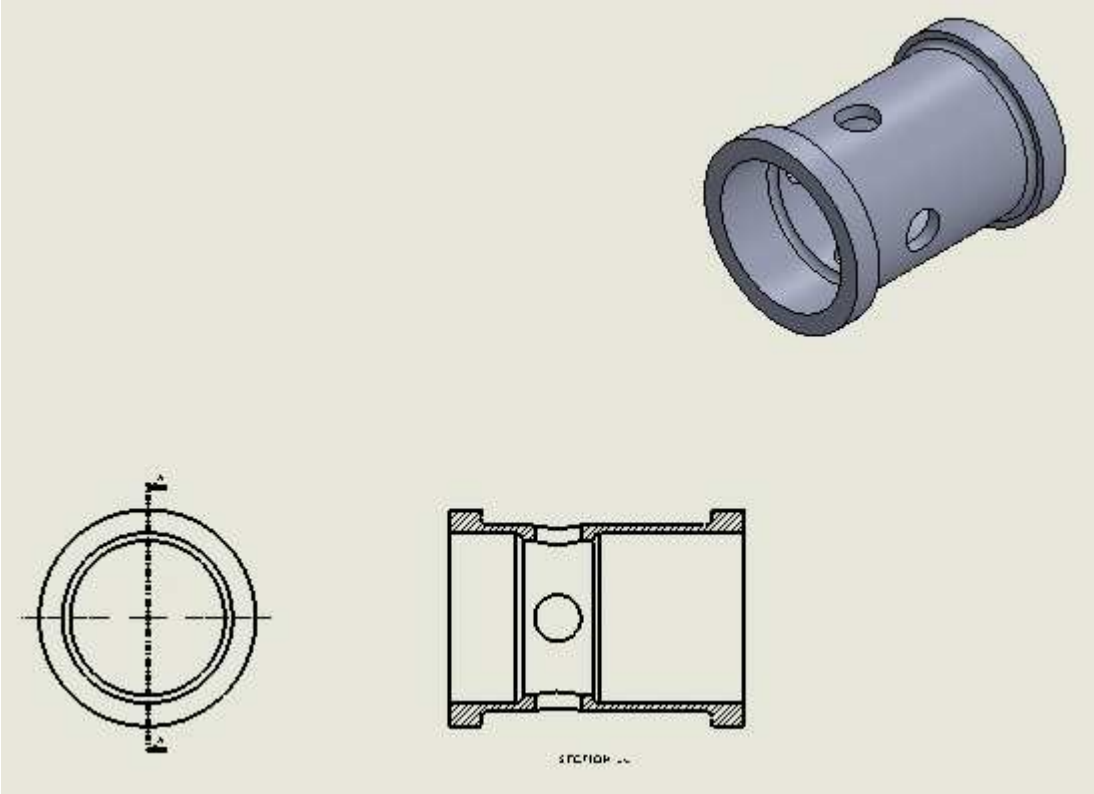
2. **Problem 9-2**



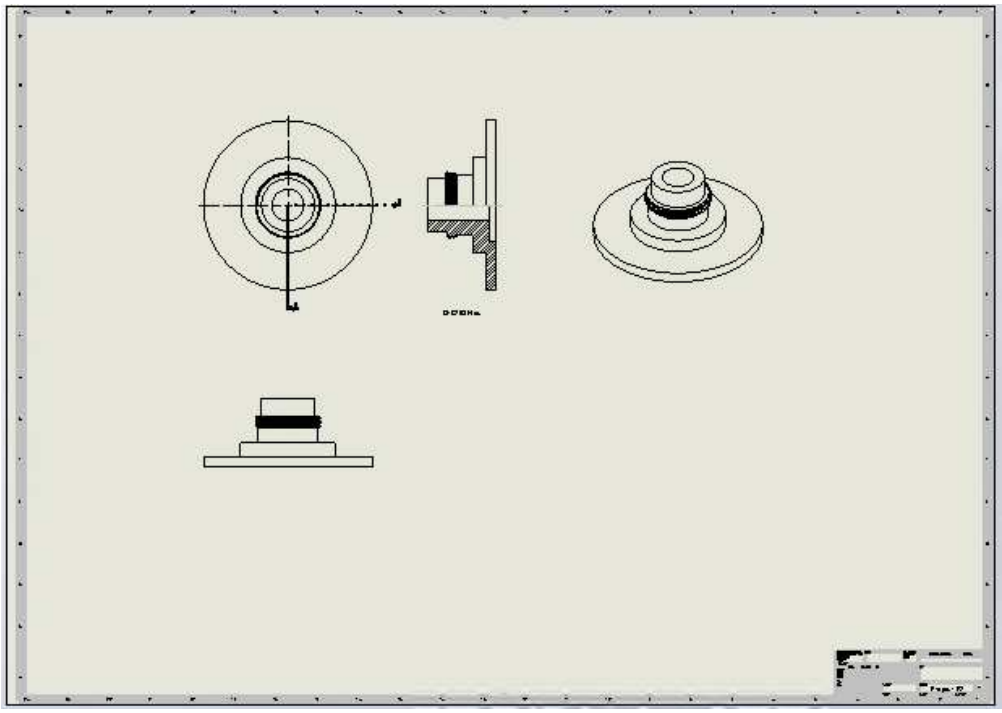
3. **Problem 9-3**

The views are all shown in the chapter.

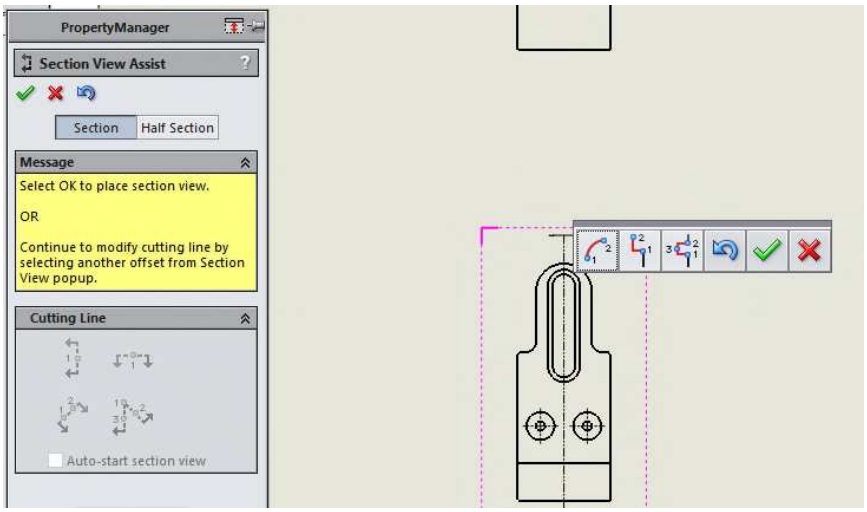
4. Project P1



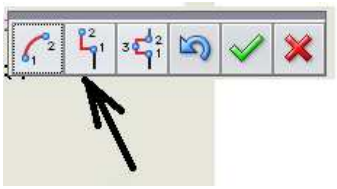
5. Project P2



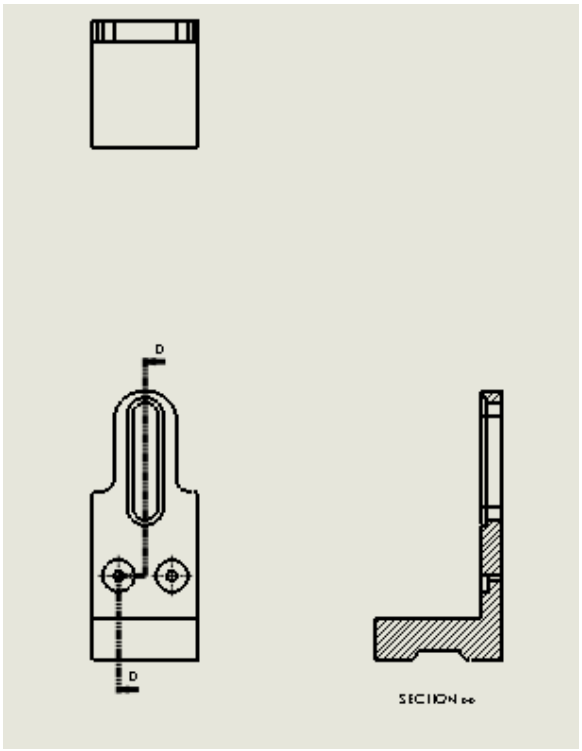
6. Project P3



Step 1



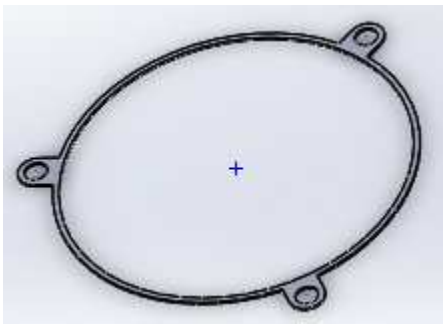
Step 2: Select the option pointed to, and click center of left circle(s)



Step 3

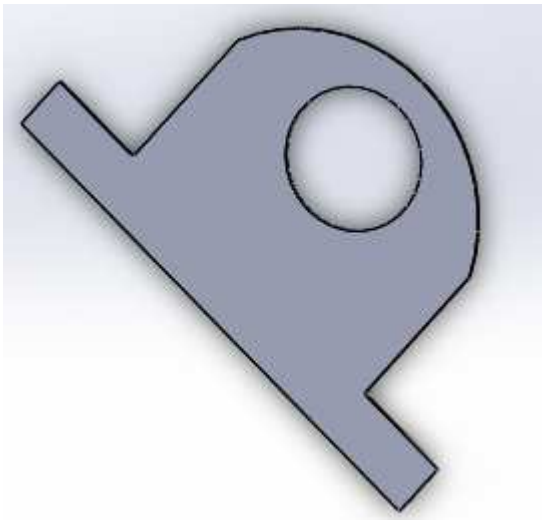
Chapter 11: Top-Down Design

1. **Problem 11-1**



Shape follows the solution given

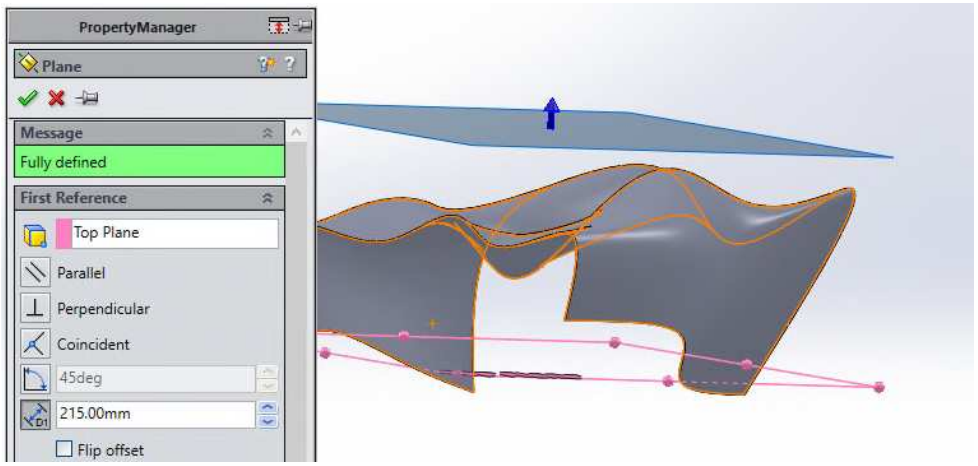
2. **Problem 11-2**



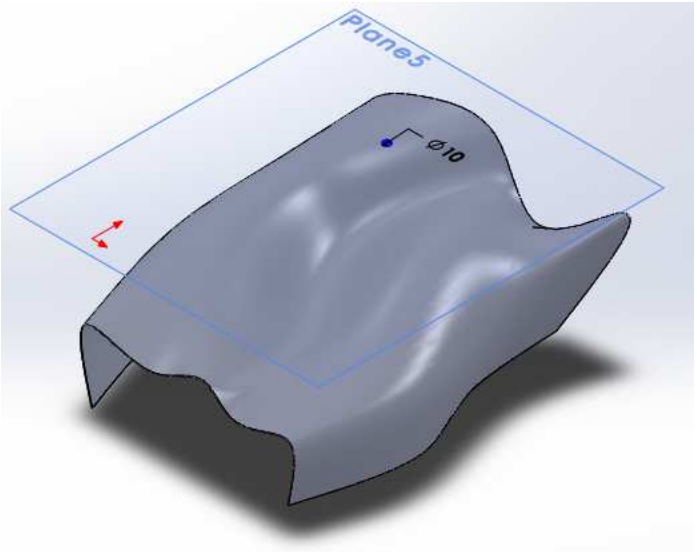
Shape follows the solution given

Chapter 12: Surface Modeling

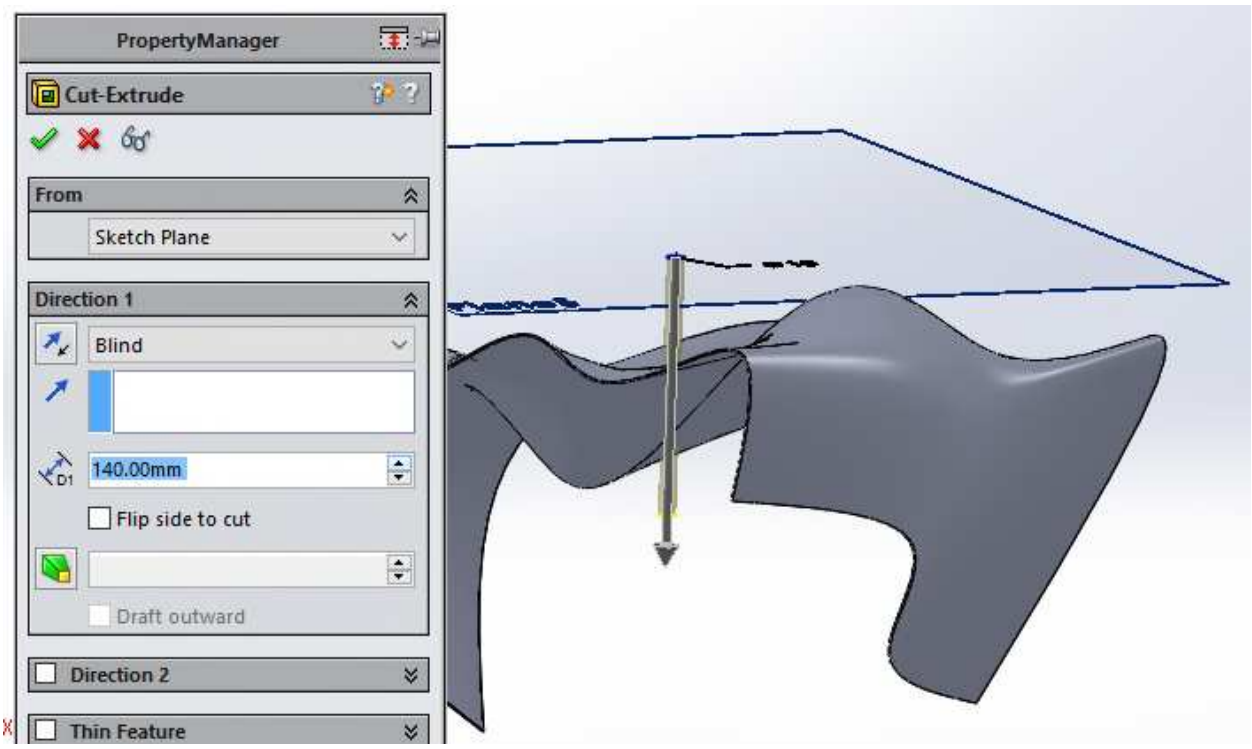
1. Problem 12-1



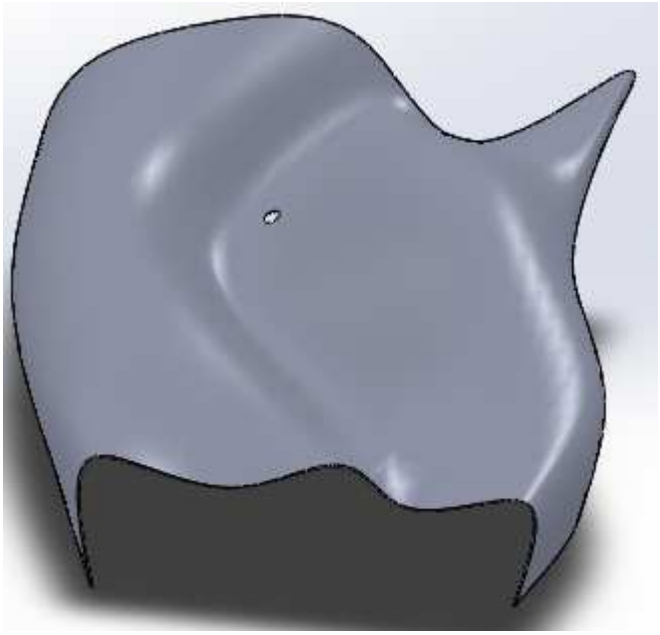
Step 1



Step 2

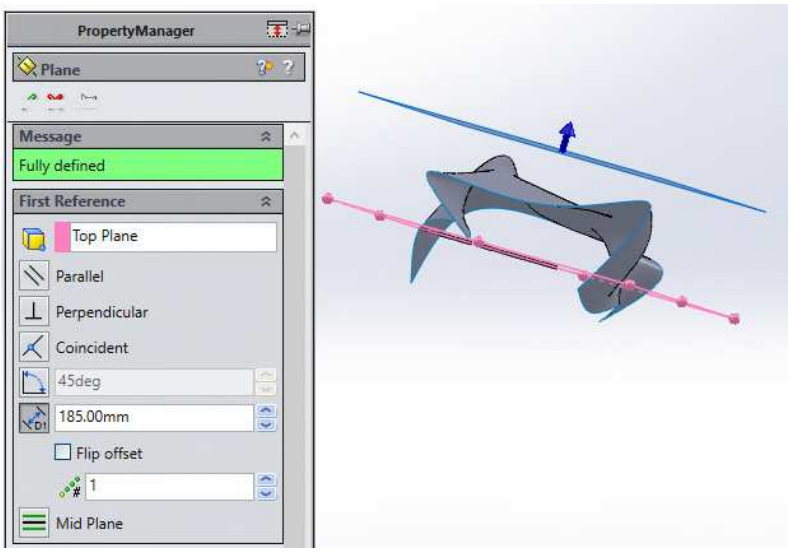


Step 3

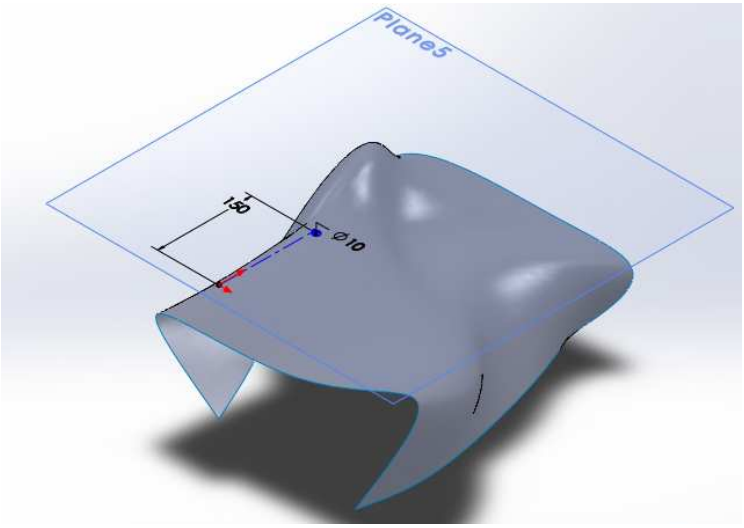


Step 4

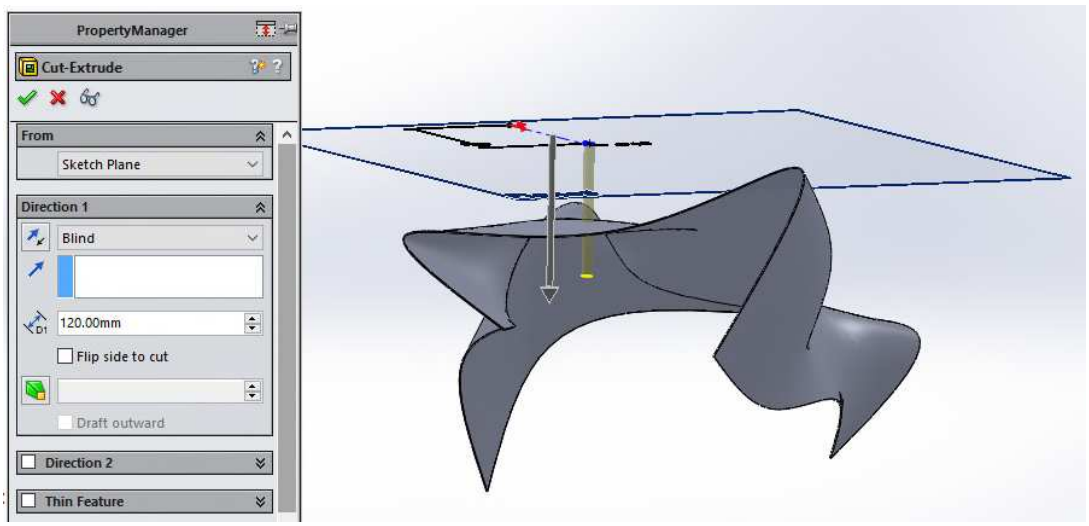
2. Problem 12-2



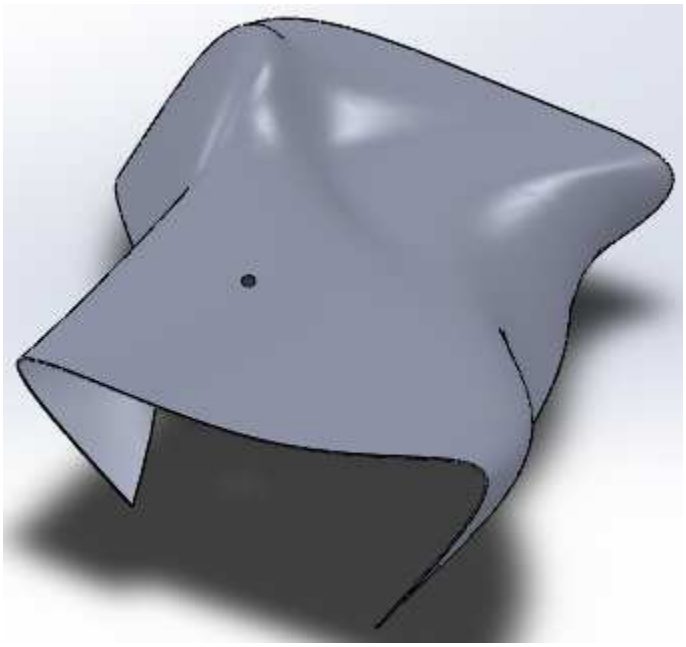
Step 1



Step 2



Step 3



Step 4

3. Problem 12-3

Used for patching surfaces

Chapter 13: Tool Boxes and Design Libraries

Projects 1—6 are to be carried out as projects based on the content of chapter 13

Chapter 15: Tool Boxes and Design Libraries

Projects 1—6 are to be carried out as projects based on the content of chapter 13

1. **Problem 15-1**

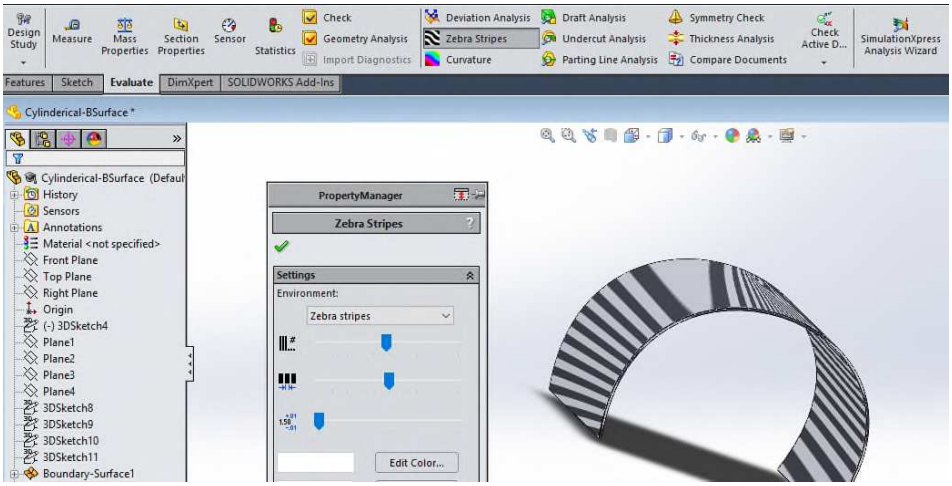
   Basic motion uses motors, springs, 3D contacts, and gravity (Physical Simulation); it does not use frames. Motion analysis is and Add-In to SolidWorks and it is the highest level of motion study.

2. **Problem 15-2**
   No

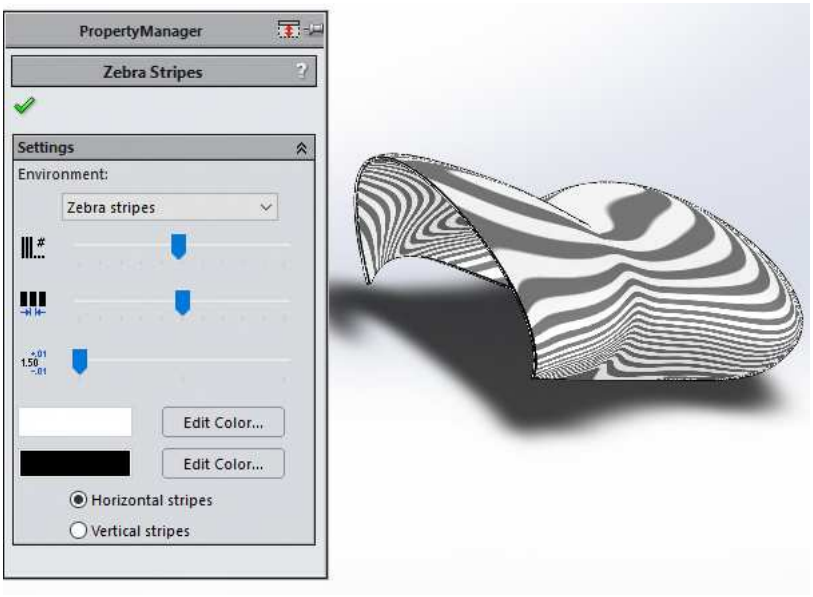
3. **Problem 15-3**
   No

Chapter 16: Rendering

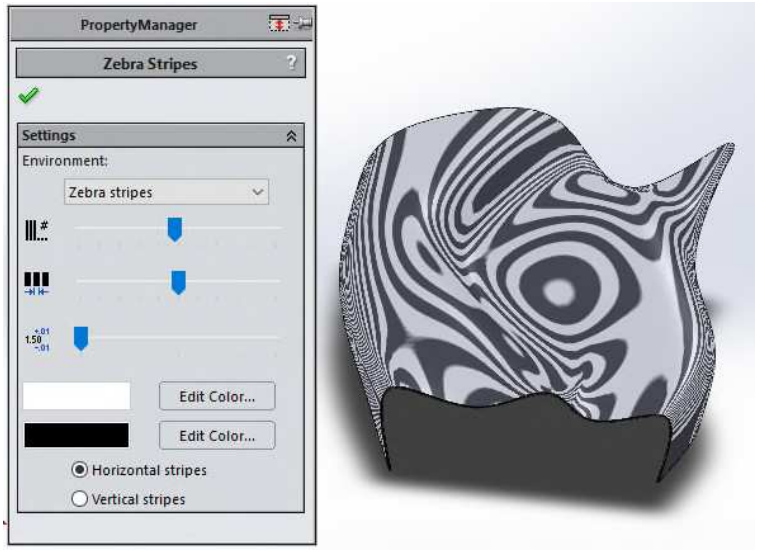
1. Problem 16-1



2. Problem 16-2

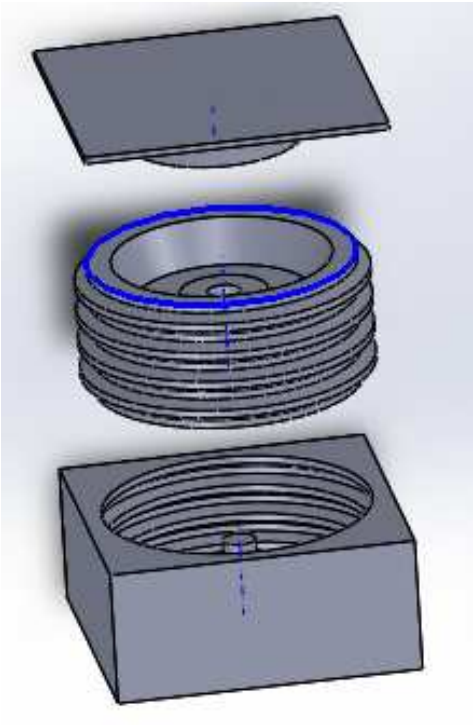


3. Problem 16-3

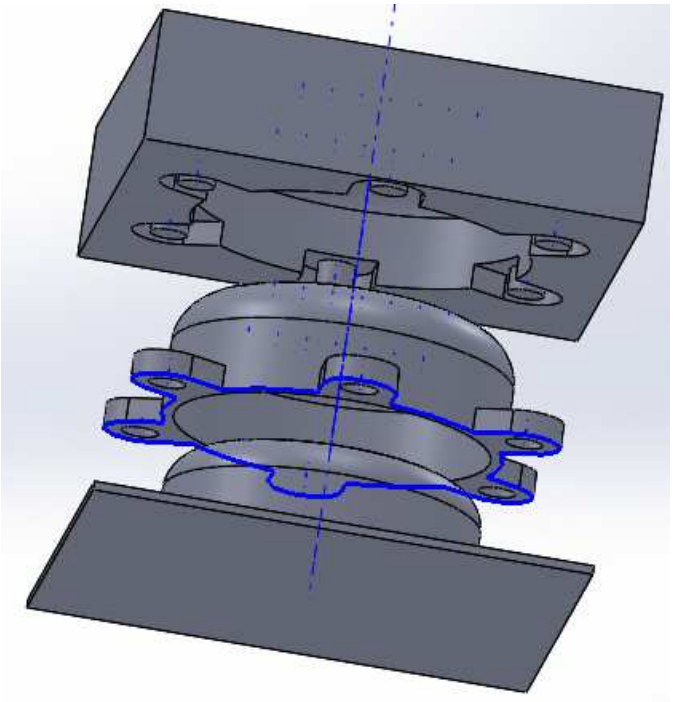


Chapter 17: Mold Design

1. **Problem 17-1**

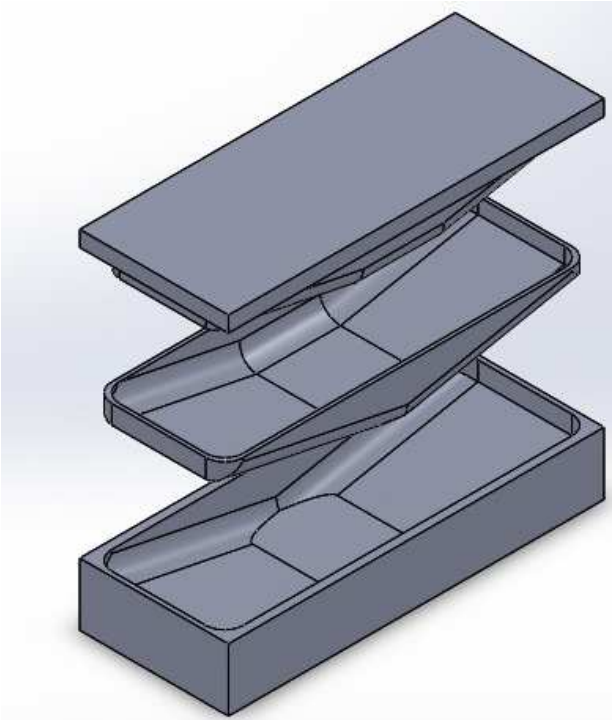


2. **Problem 17-2**



3. **Problem 17-3**

4. **Problem 17-4**



Chapter 18: Sheet Metal Parts—I

1. **Problem 18-1**

   Repeat problem

2. **Problem 18-2**

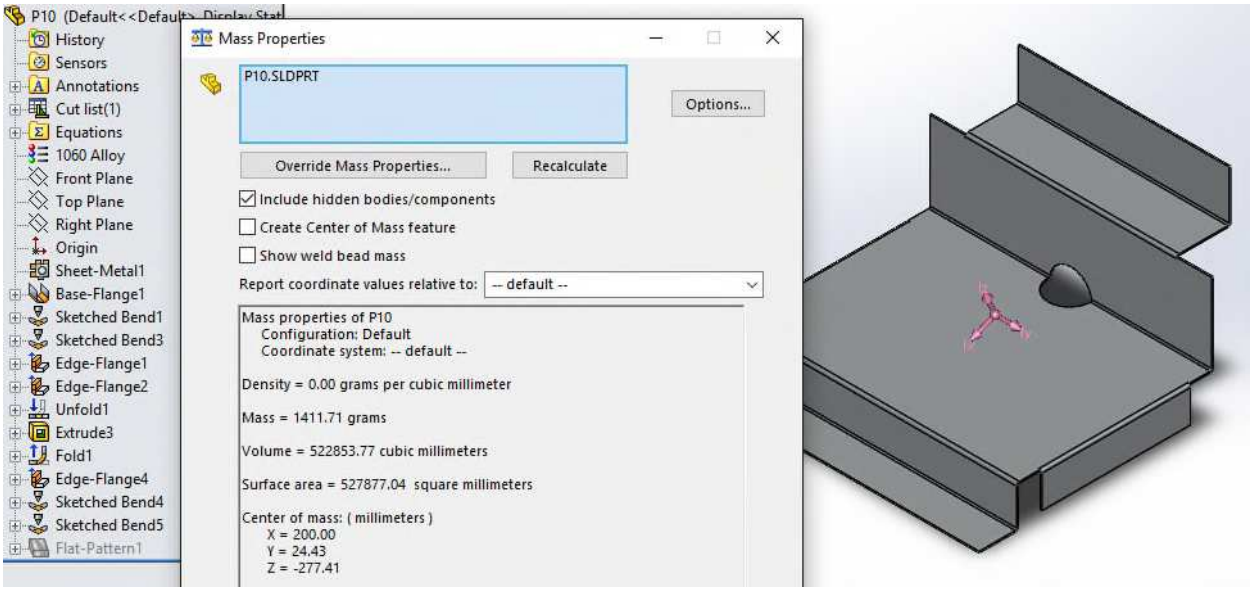
   Repeat problem

3. **Problem 18-3**

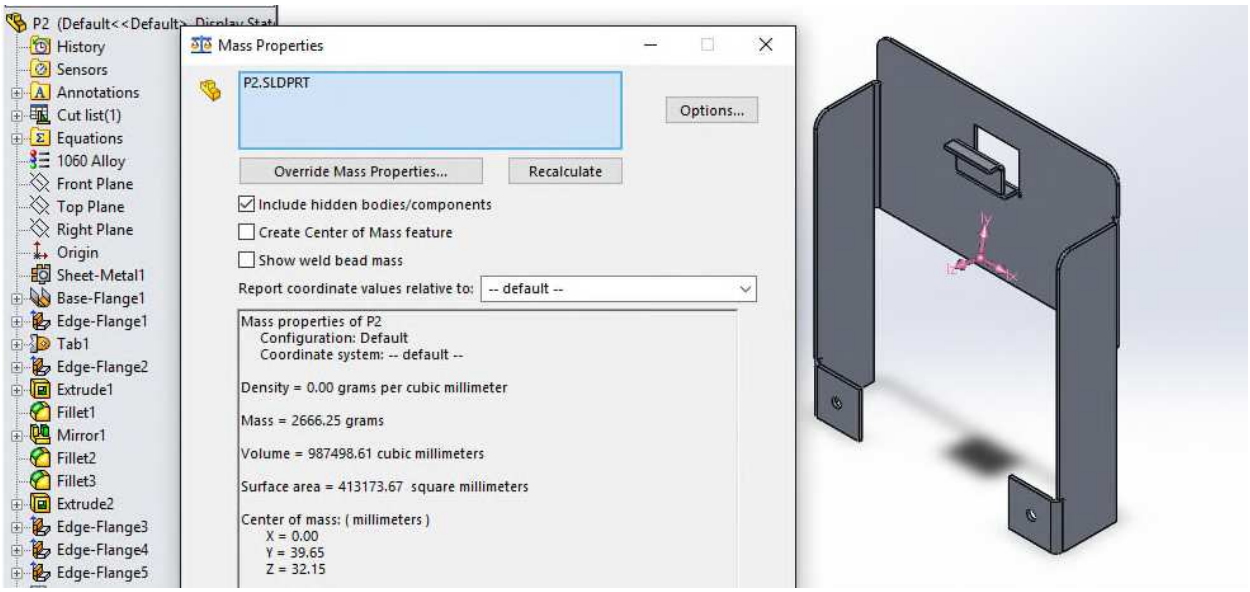
   Repeat problem

Chapter 19: Sheet Metal Parts—II

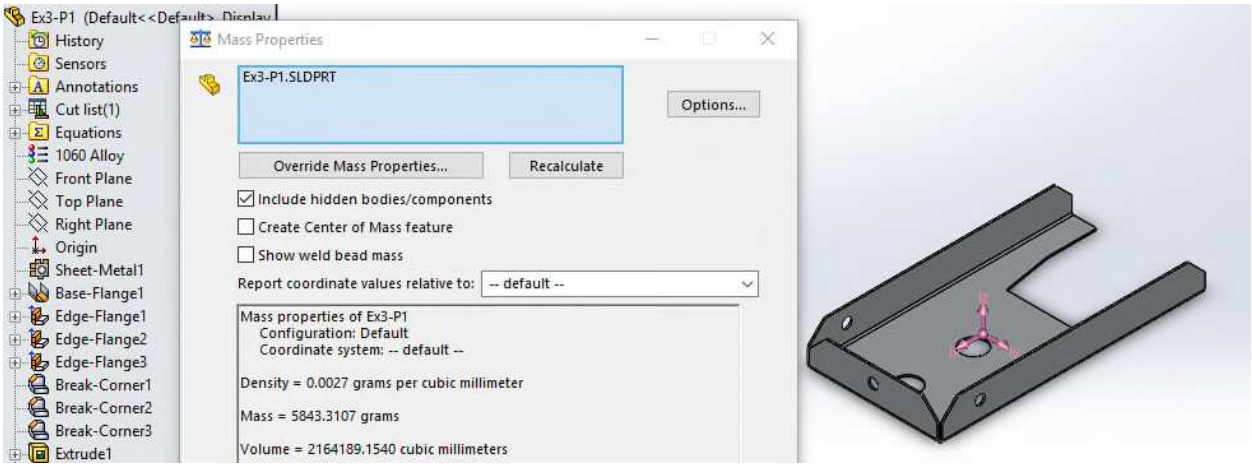
1. **Problem 19-1**



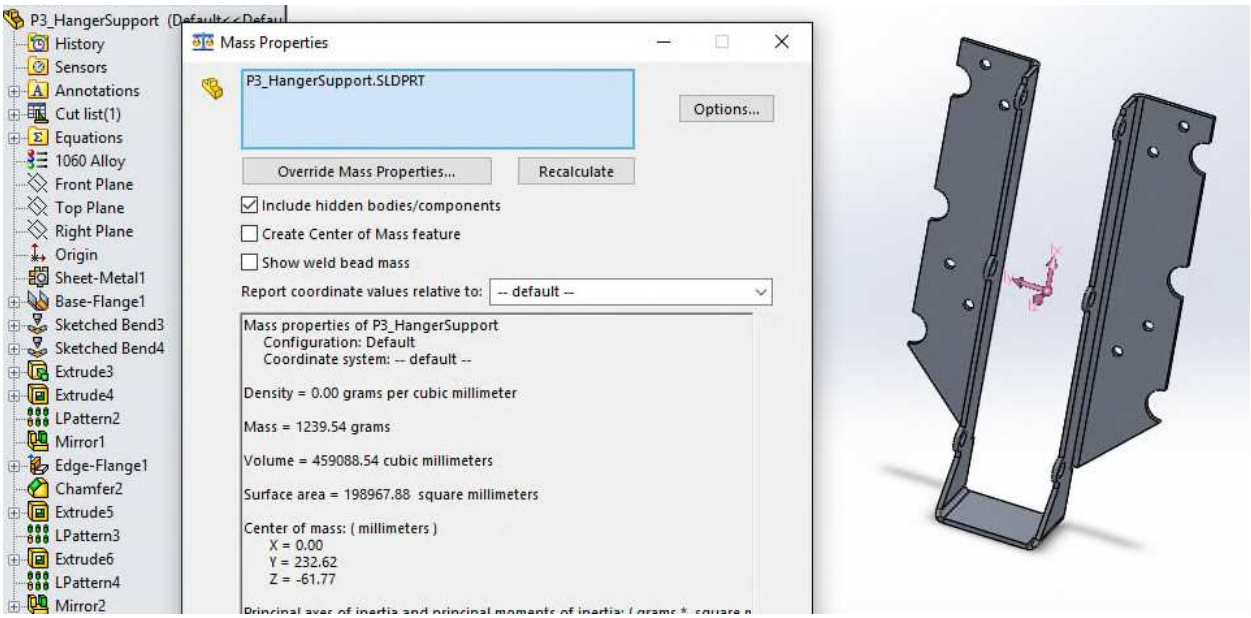
2. Problem 19-2



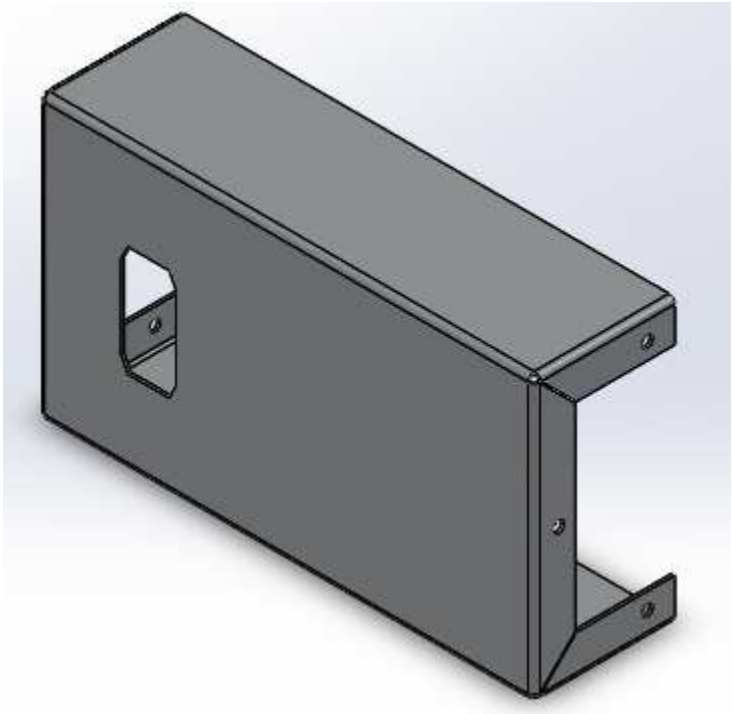
3. Problem 19-3



4. Problem 19-4



5. Problem 19-5



Chapter 20: Weldments

1—9 are to be carried out as projects based on the content of chapter 20

Chapter 22: Power Transmission Elements

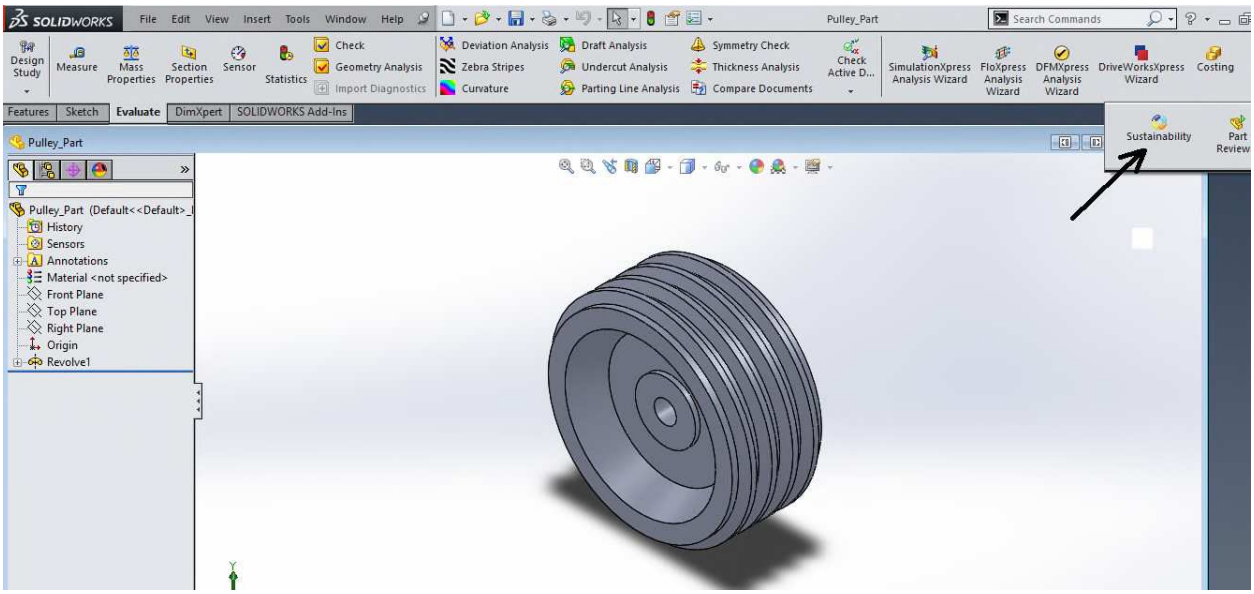
Projects 1—3 are to be carried out as projects based on the content of chapter 22

Chapter 23: Cam Design

Projects 1—2 are to be carried out as projects based on the content of chapter 23

Chapter 31: Sustainability Design for Parts

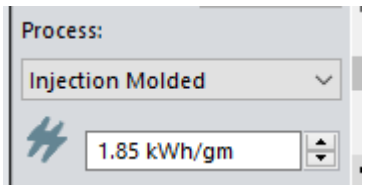
1. Problem 31-1



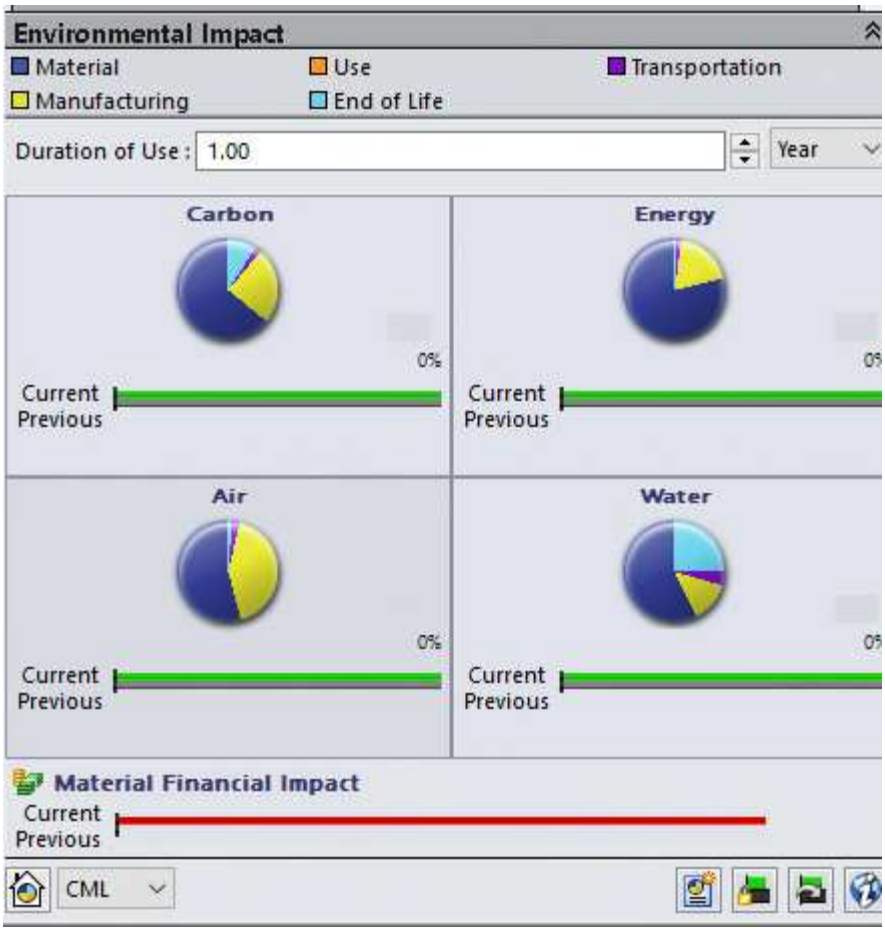
Step 1

Step 2 Material

Step 3 Manufacturing



Step 4 Process



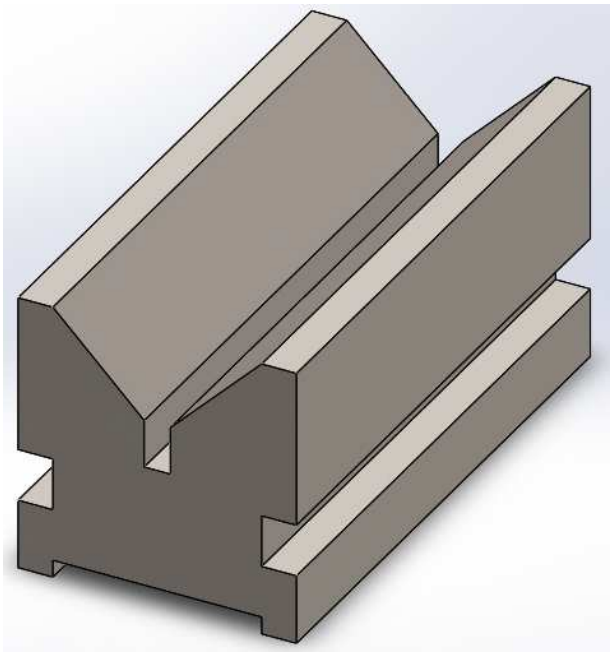
Step 5

2. Problem 31-2 to 13-4

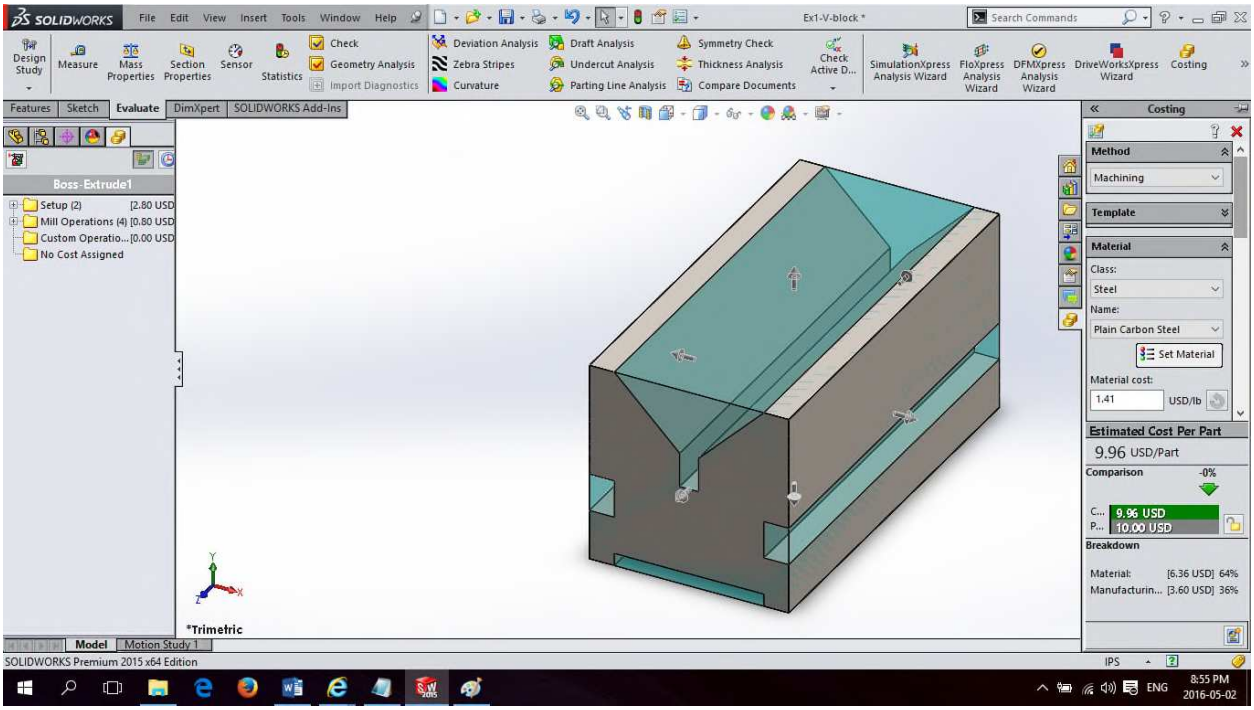
Repeat problem with models opened

Chapter 33: Evaluating the Cost of Machined Parts

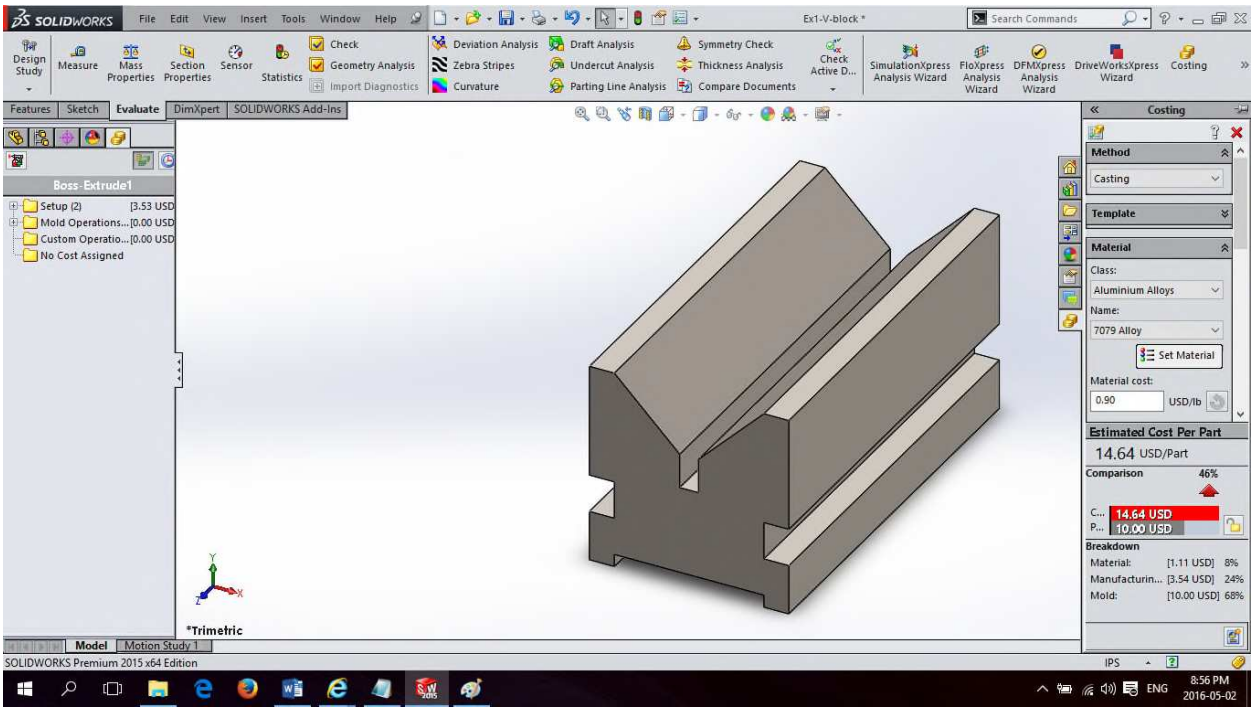
1. Problem 33-1



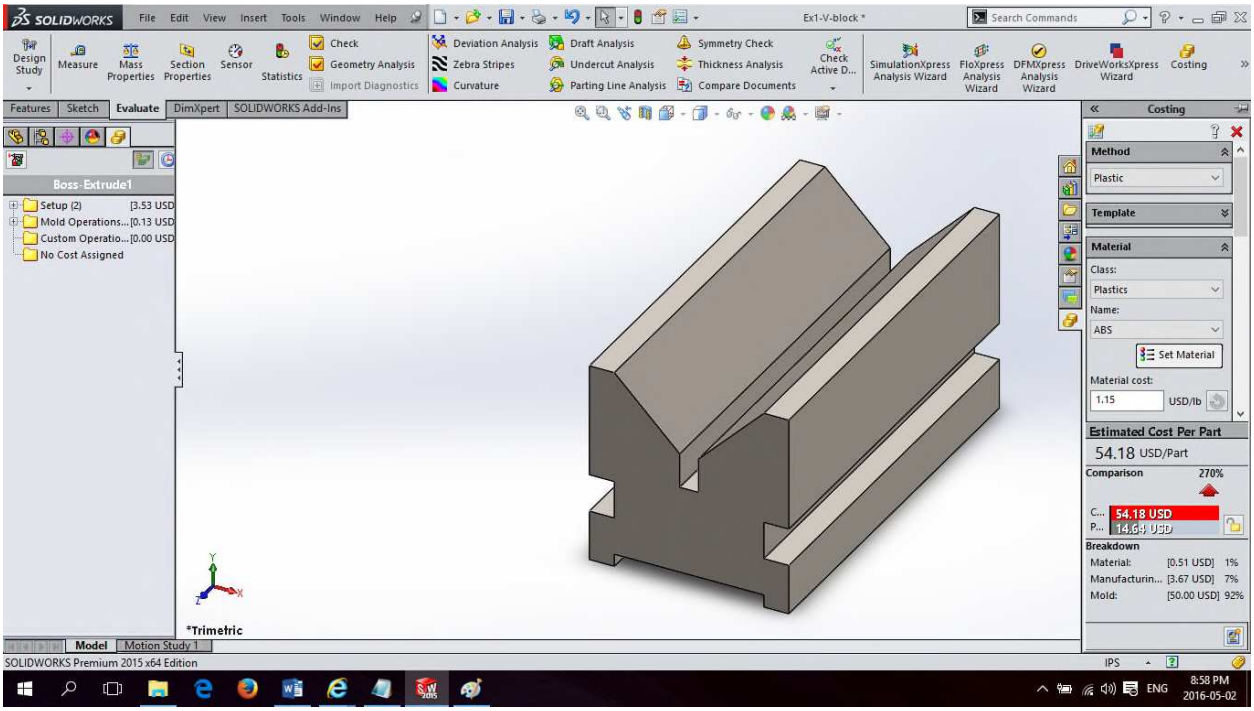
Step 1



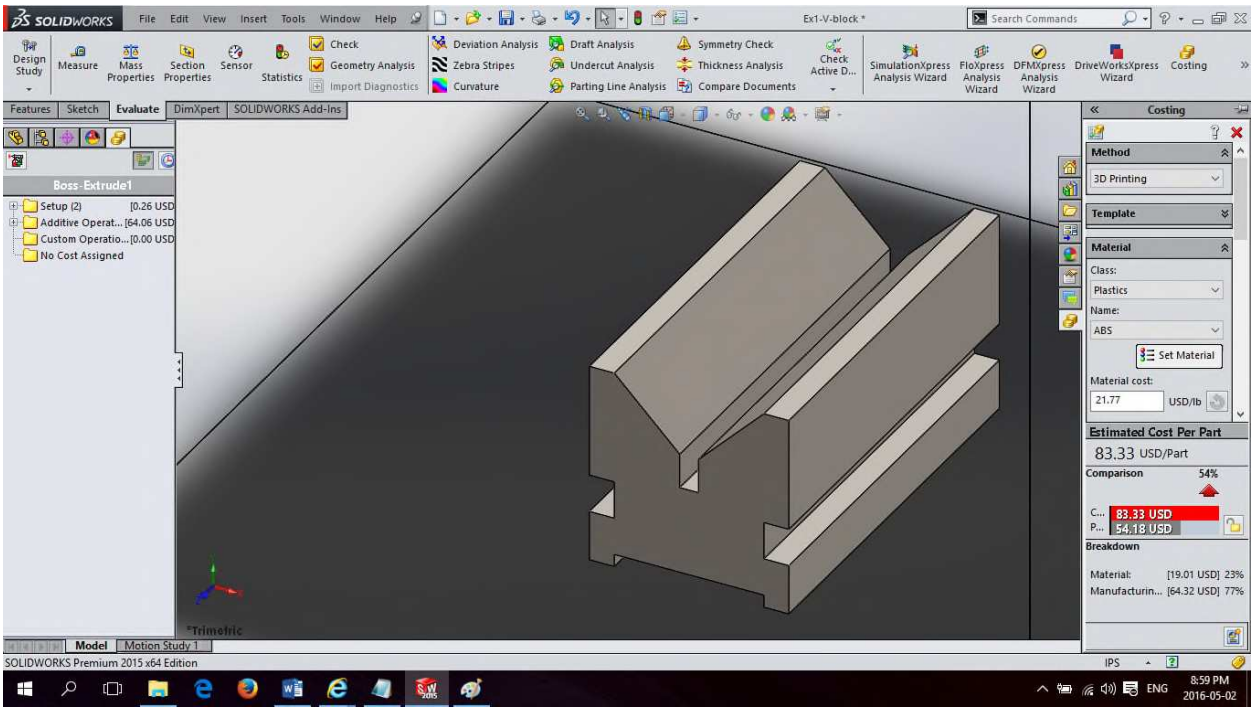
Machining: Steel



Casting: Aluminum

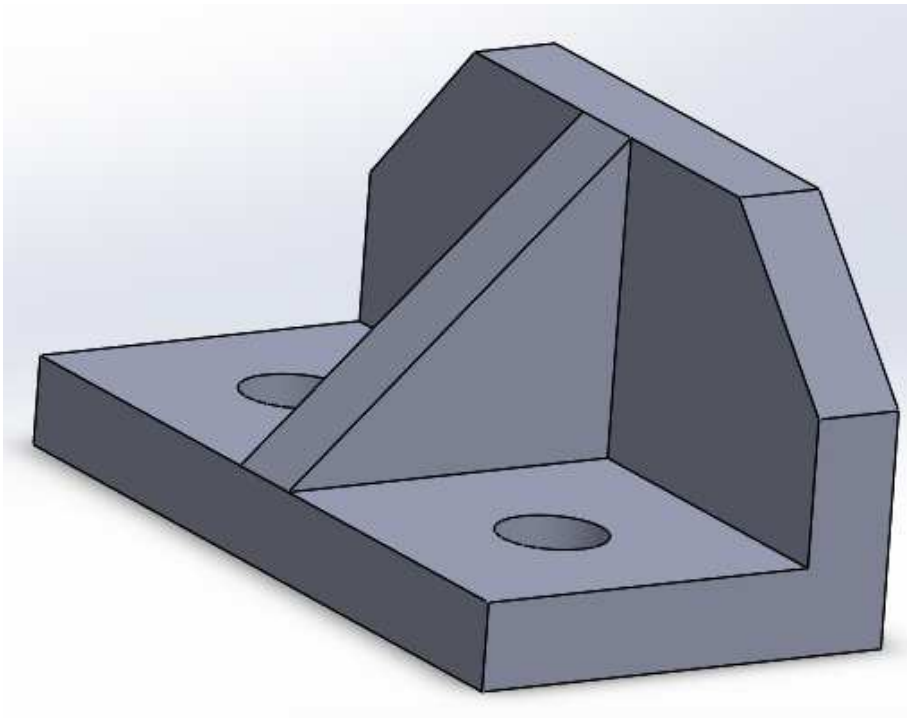


Injection Molding: Plastic

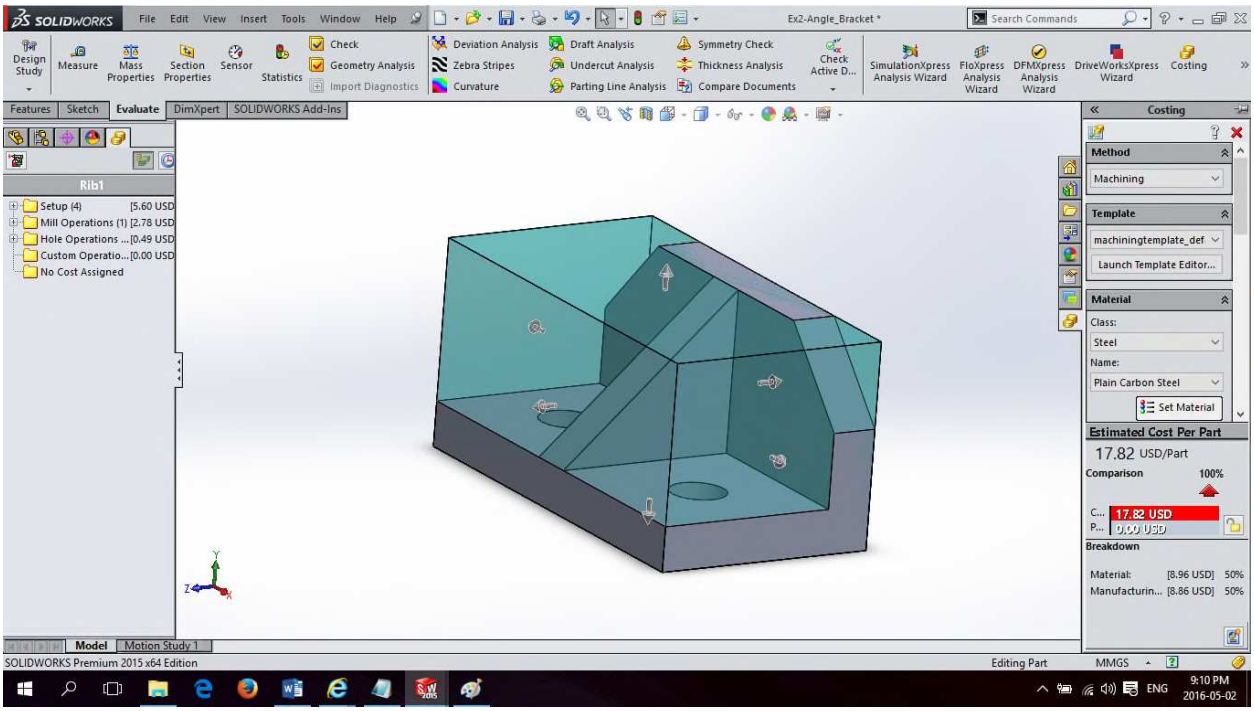


3D Printing: Plastic (ABS)

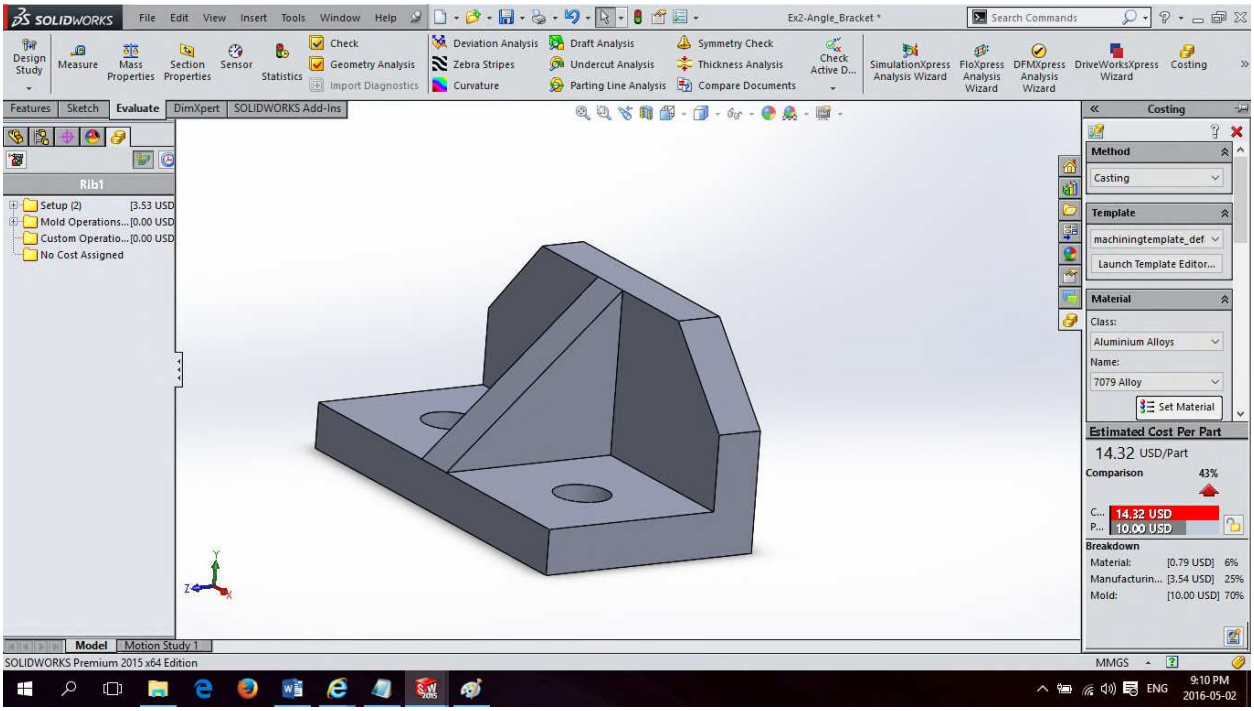
2. Problem 33-2



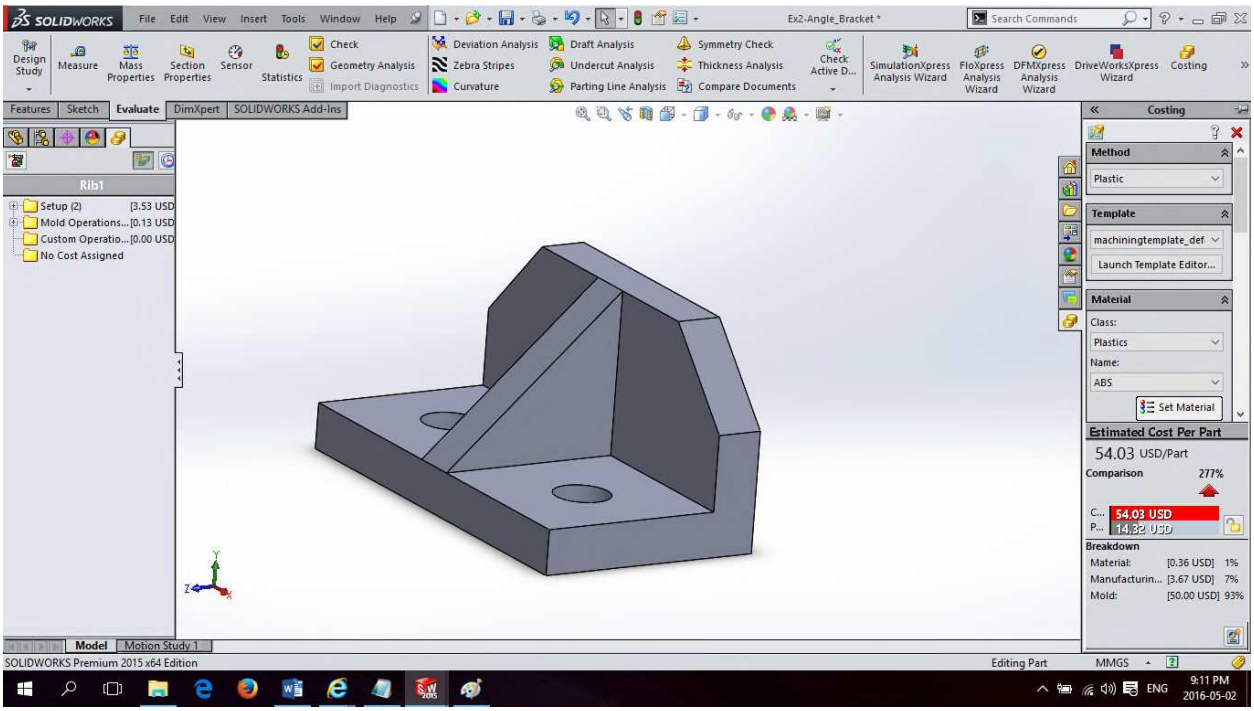
Step 1



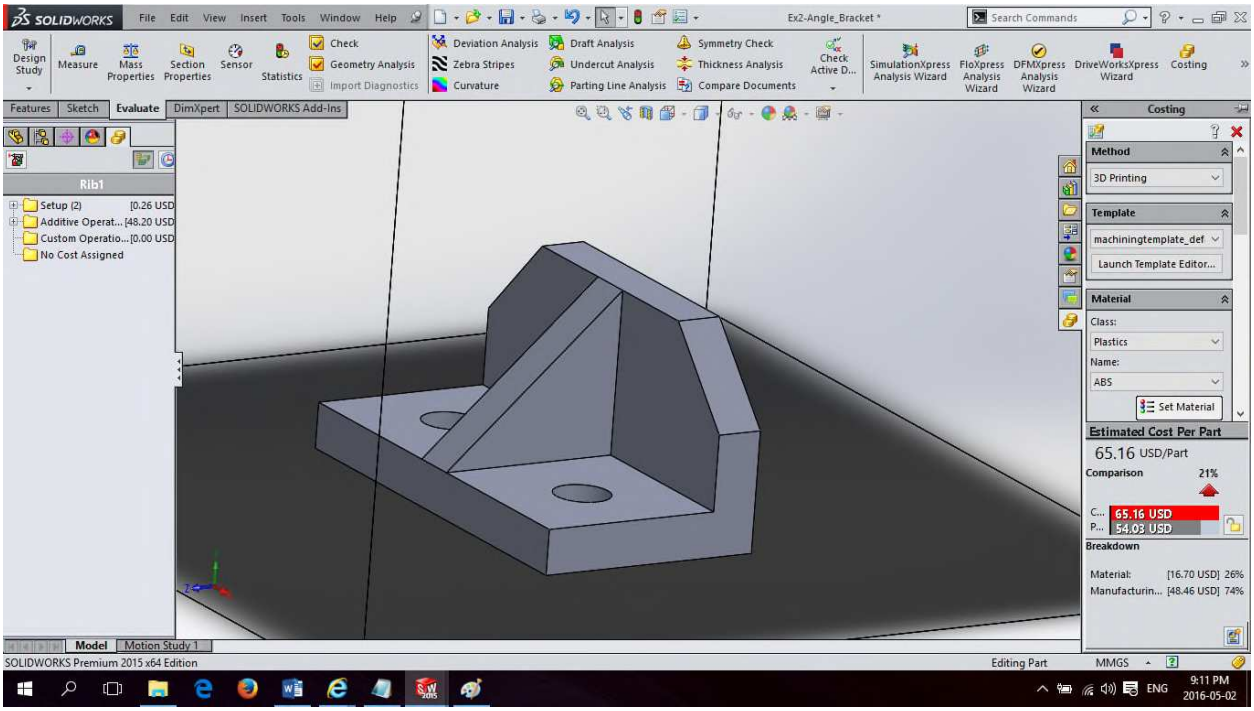
Machining: Steel



Casting: Aluminum

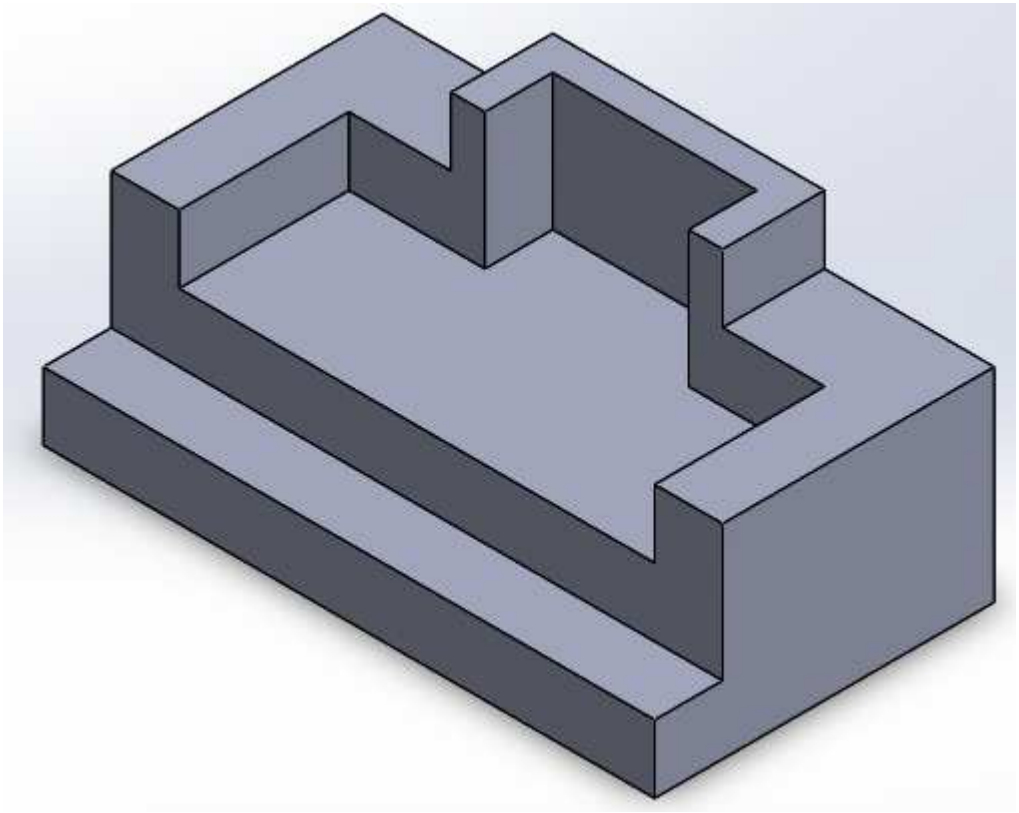


Injection Molding: Plastic

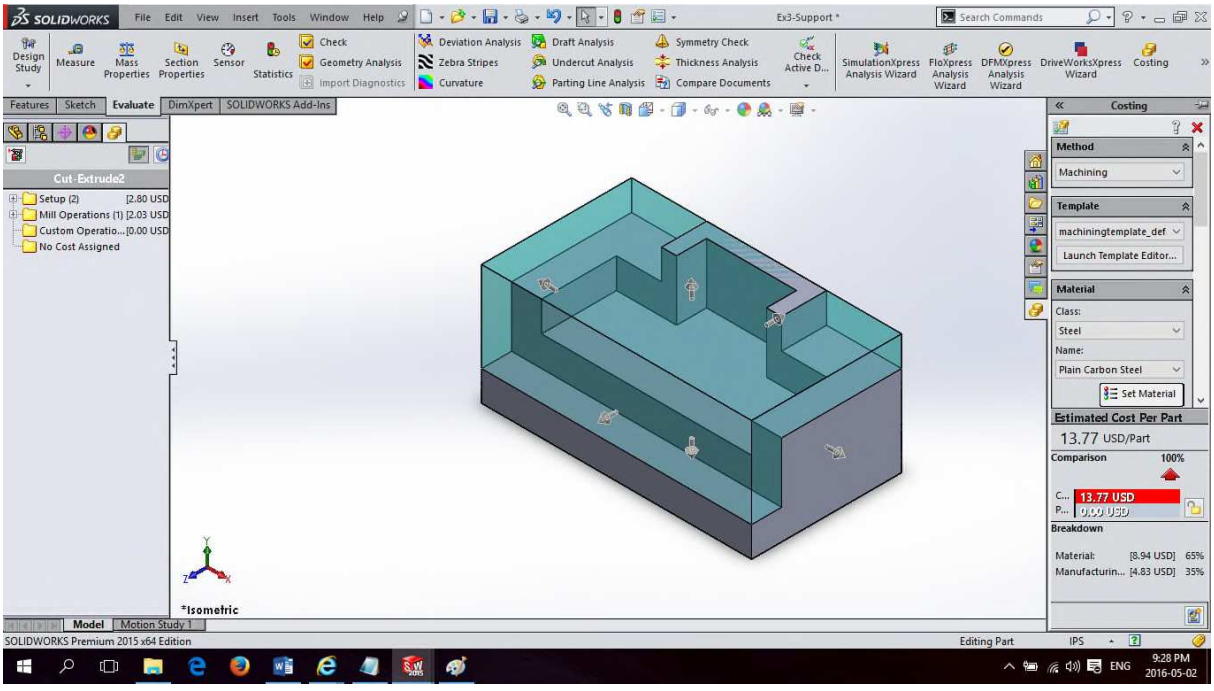


3D Printing: Plastic (ABS)

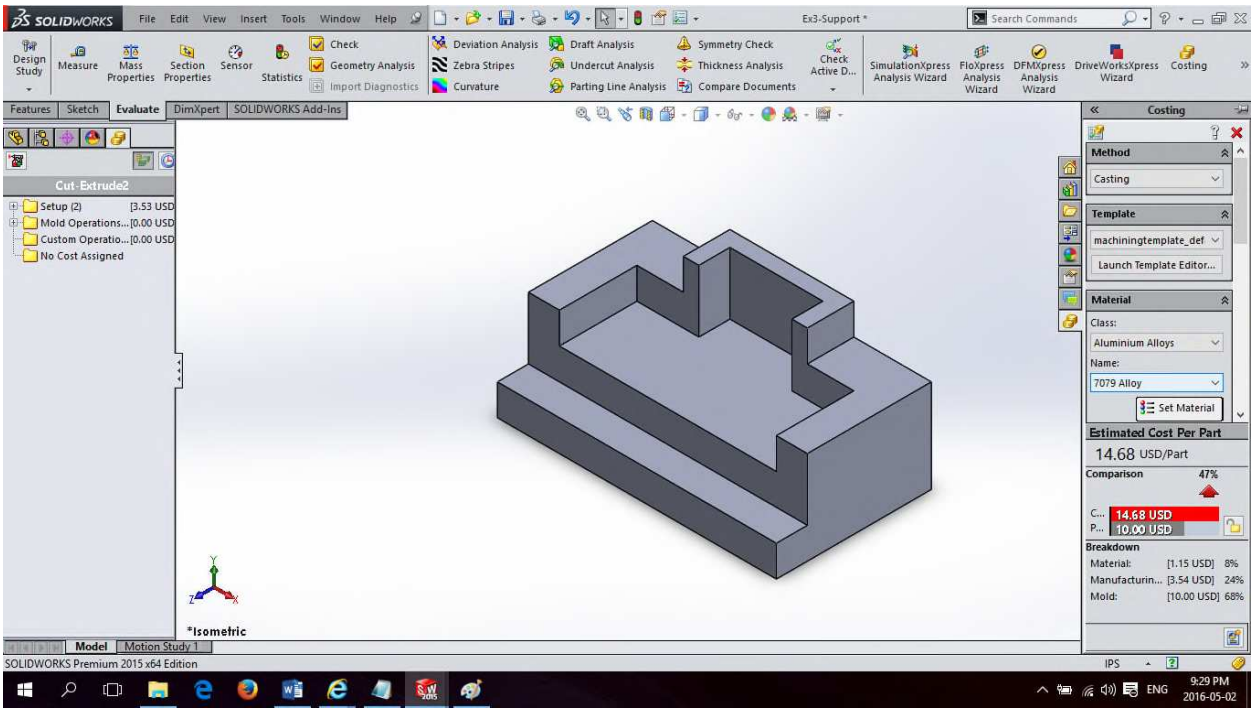
3. Problem 33-3



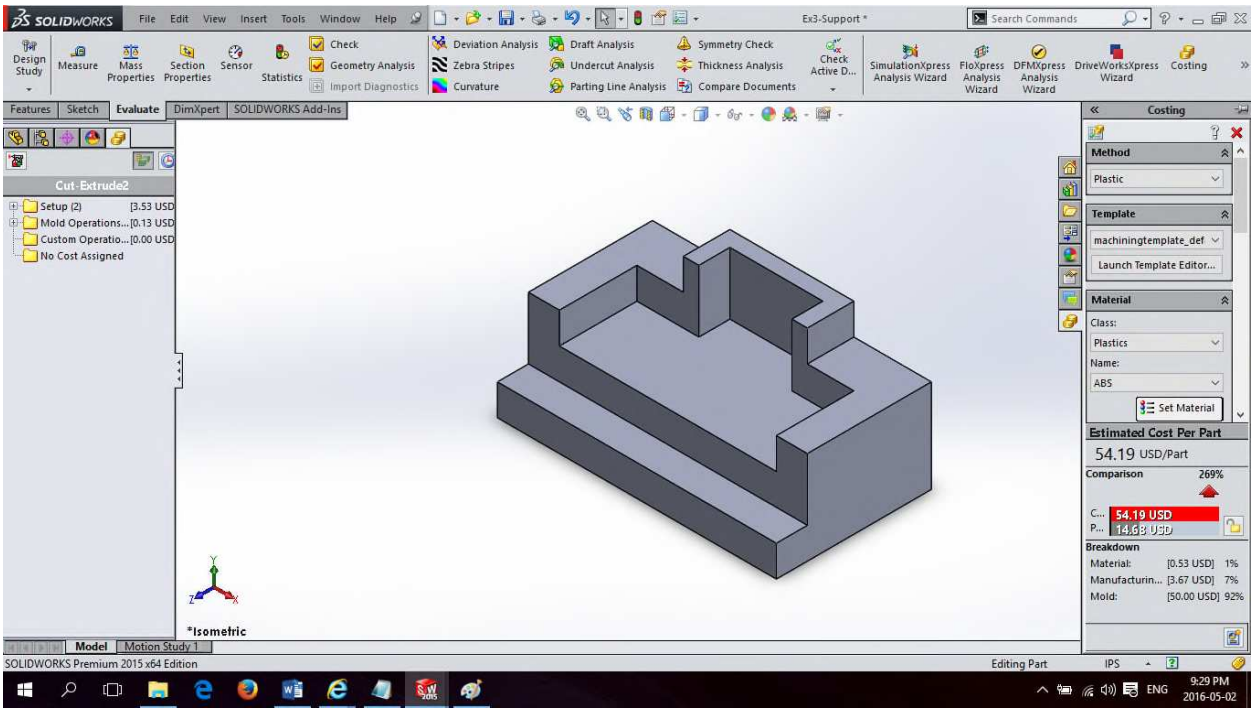
Step 1



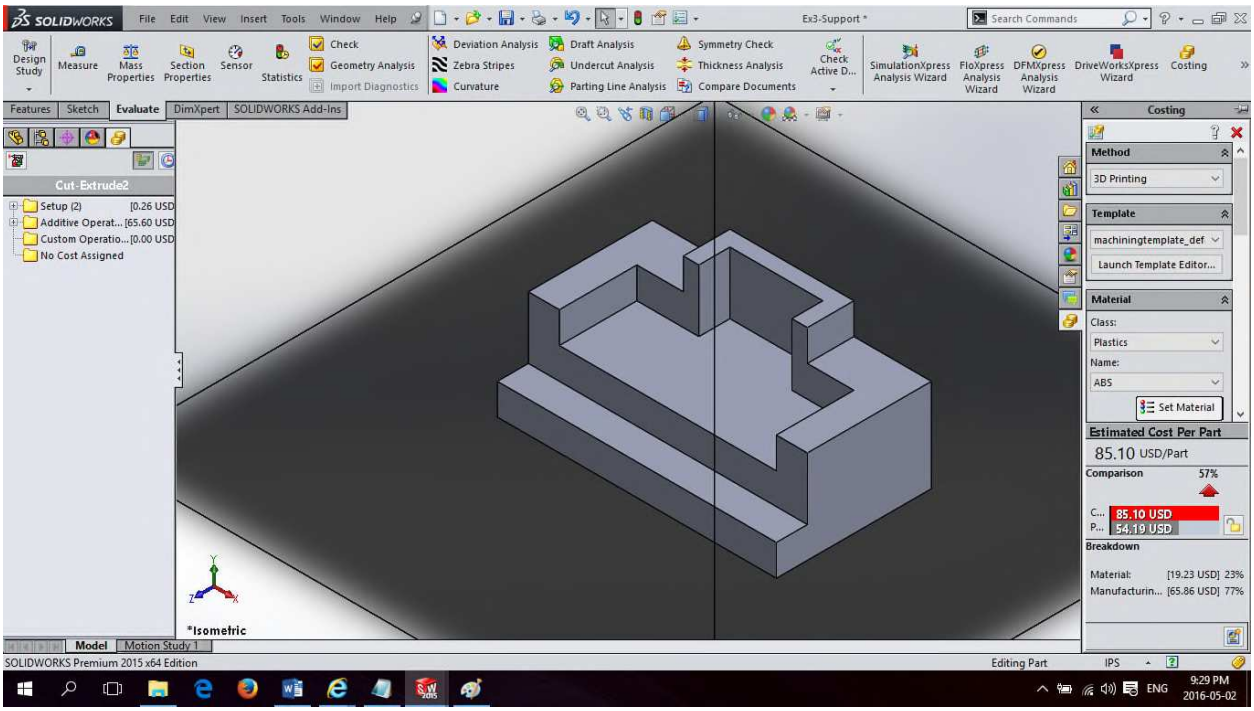
Machining: Steel



Casting: Aluminum



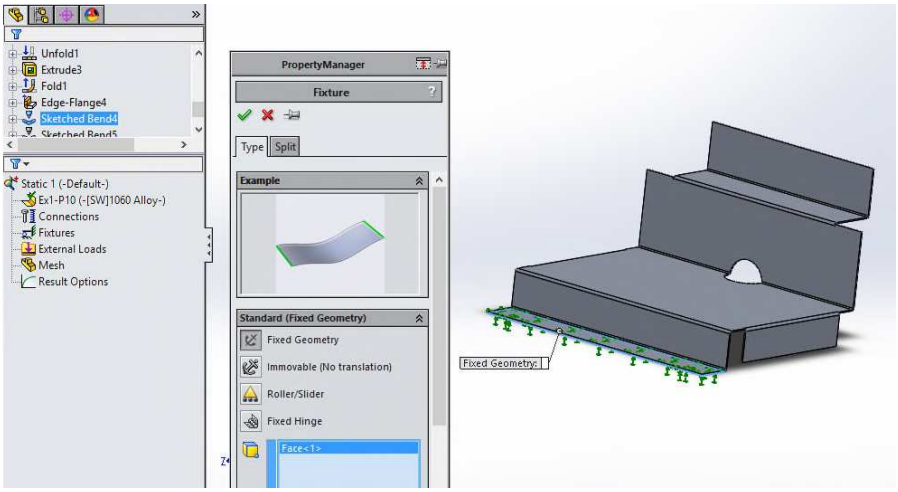
Injection Molding: Plastic



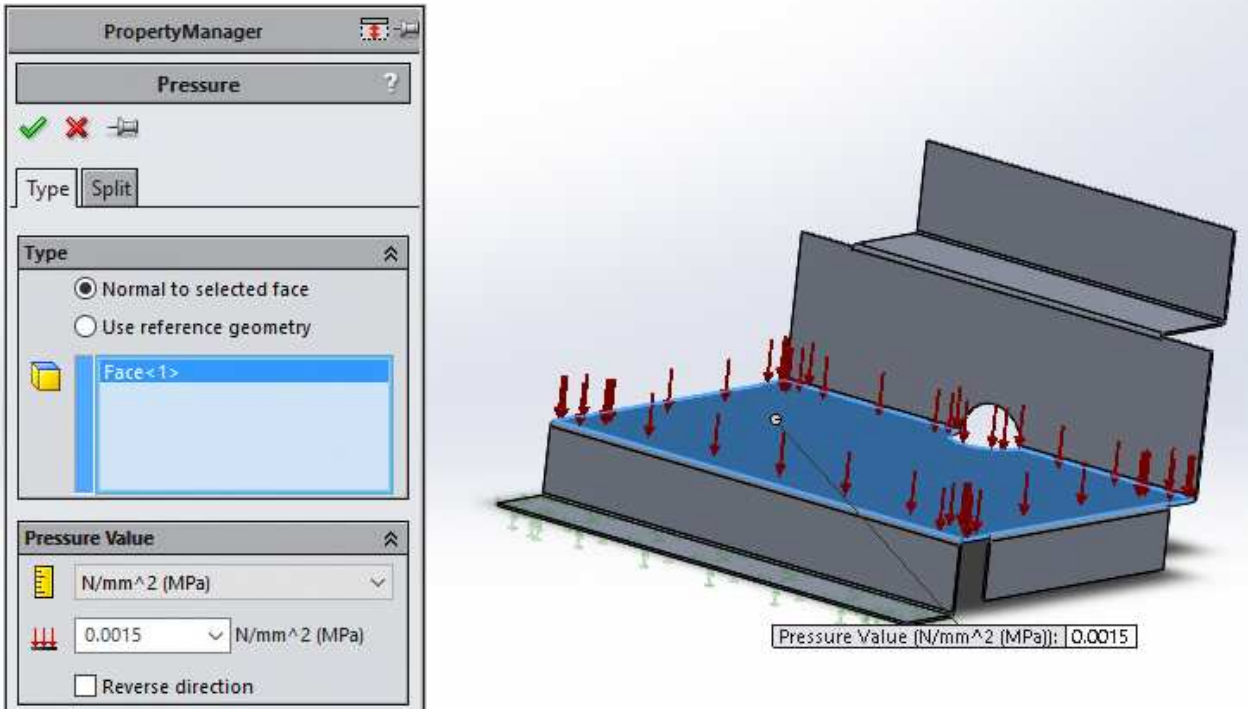
3D Printing: Plastic (ABS)

34: Finite Element Analysis Using SolidWorks

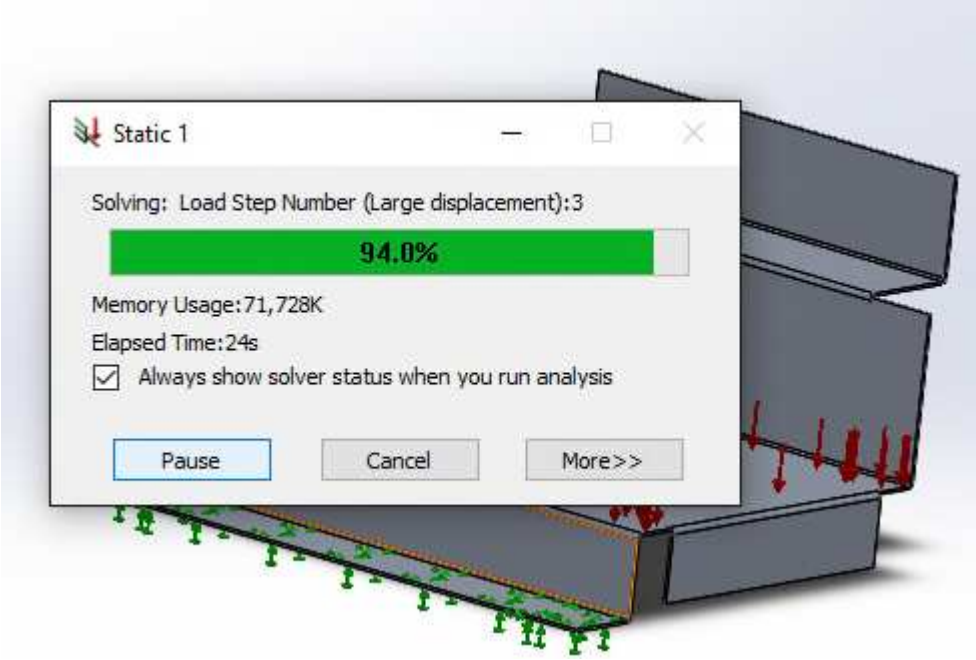
1. Problem 34-1

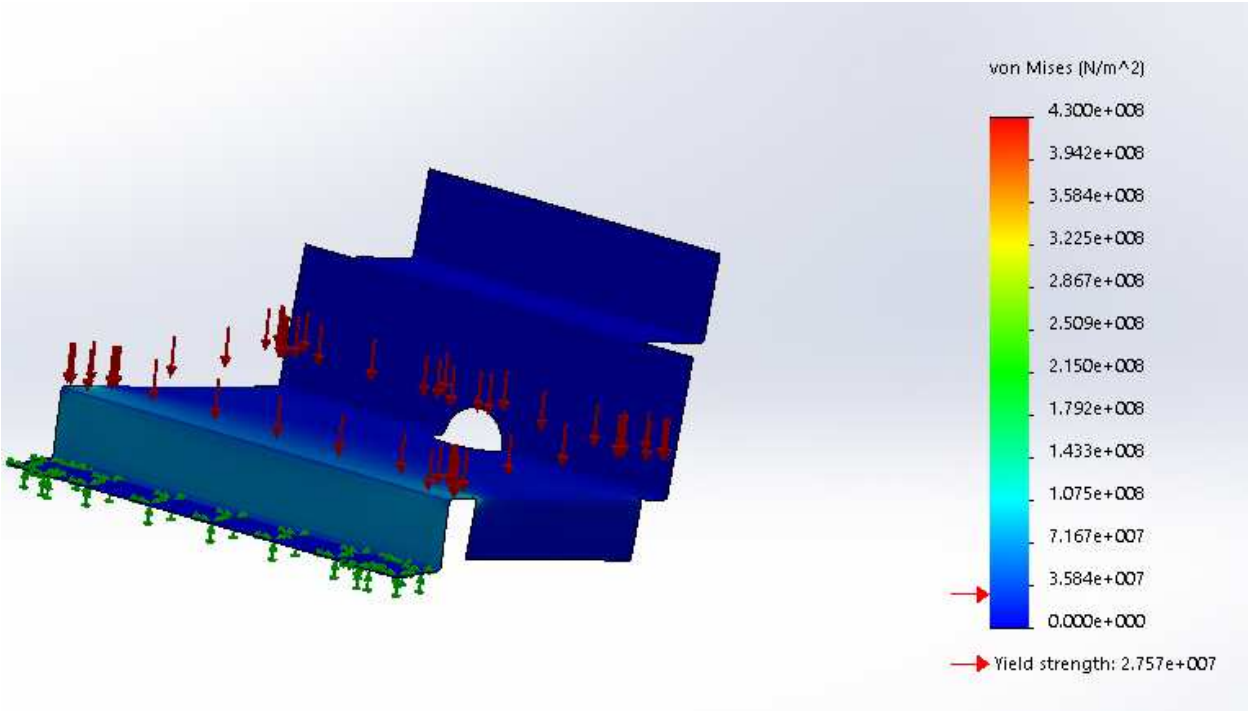


Step 1



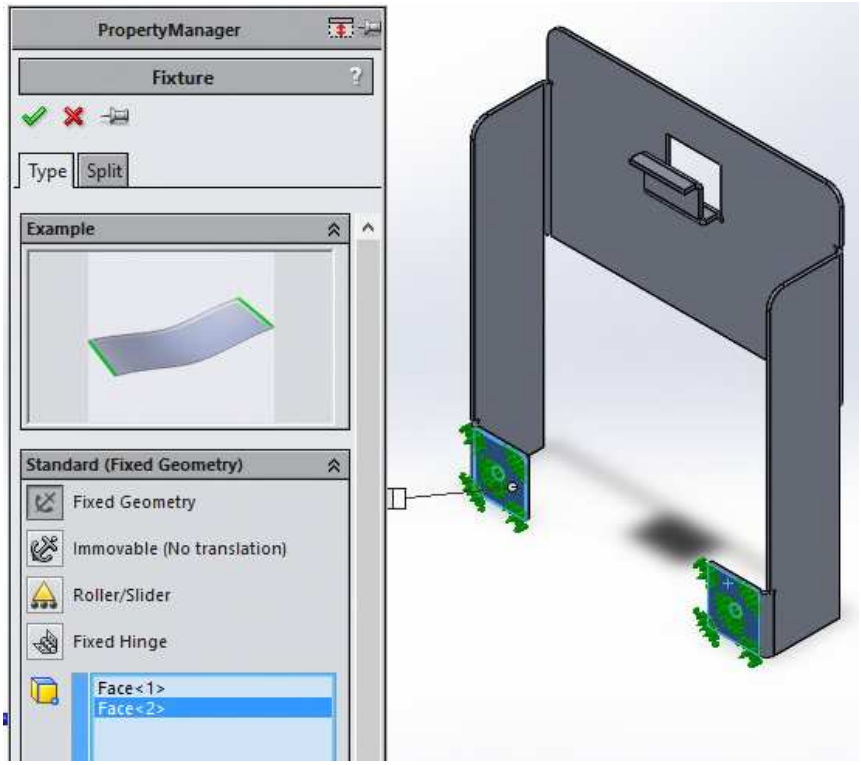
Step 2



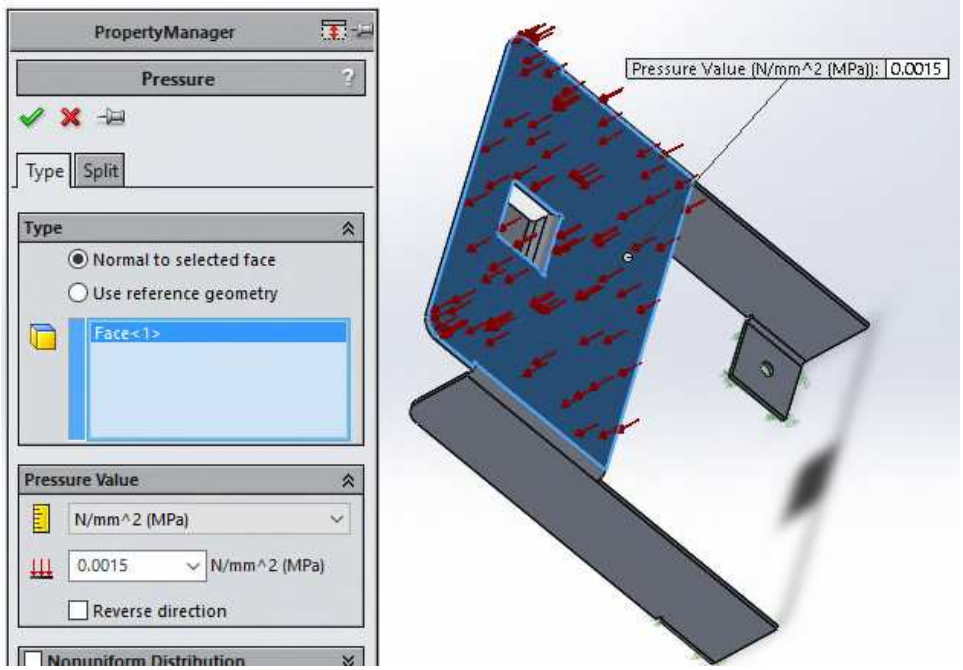


Repeat with conditions in (b) and (c)

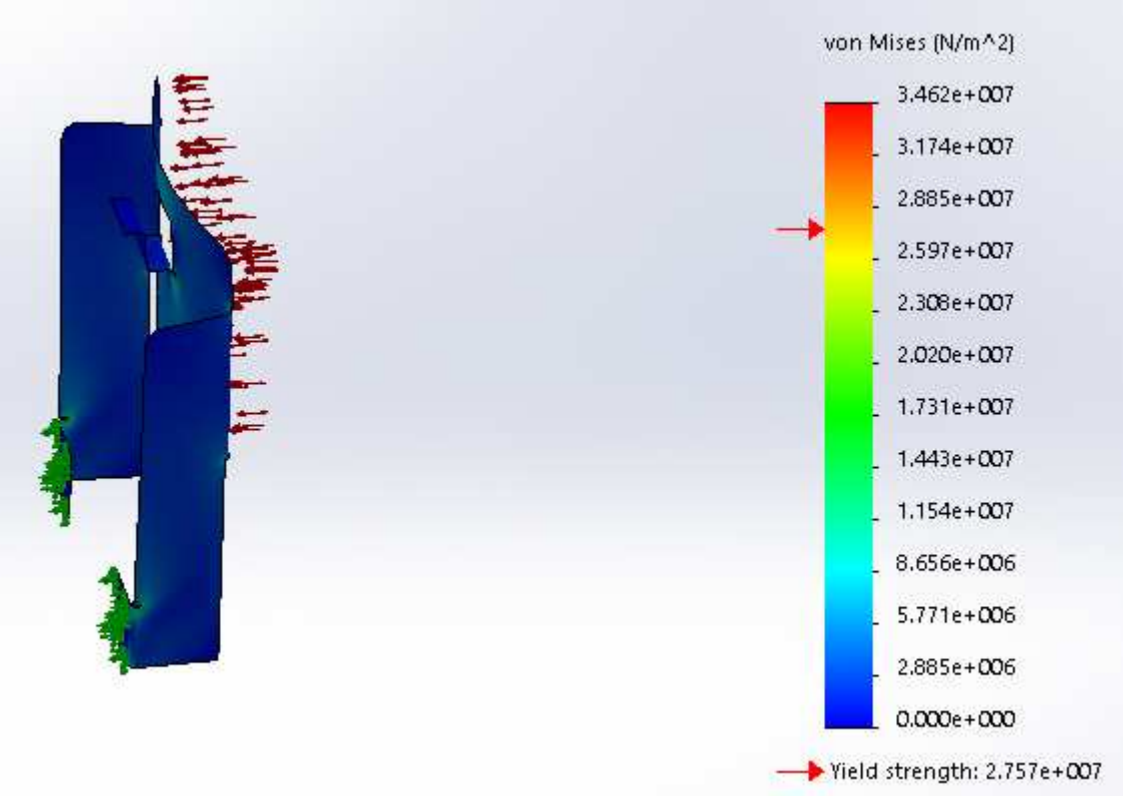
2. Problem 34-2



Step 1



Step 2



Step 3

PowerPoint
to accompany

Introduction to *SOLIDWORKS:* A Comprehensive Guide with Applications in 3D Printing

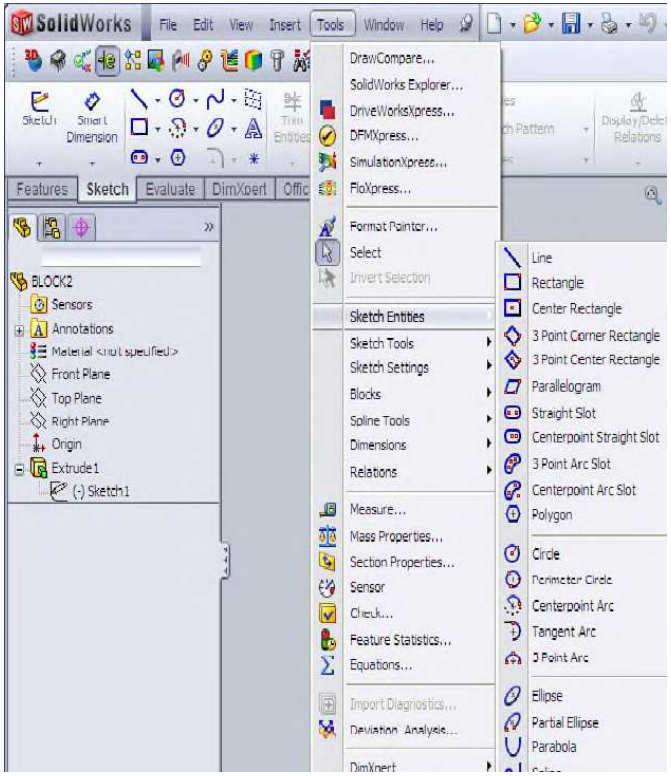
Godfrey Onwubolu

Chapter 2

With vital Source EBOOK

CRC Press
Taylor & Francis Group

Fig_2-1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File
Edit
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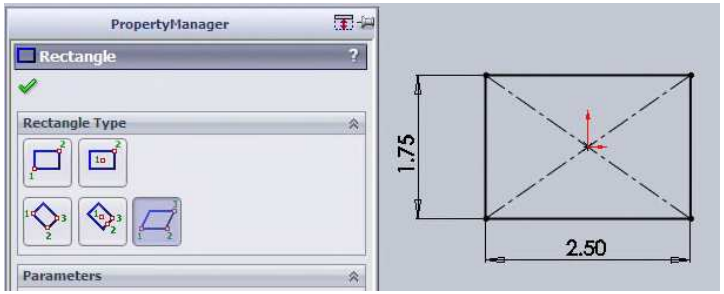
Tools
Window
Help
Features
Sketch
Evaluate
DimXpert
BLOCK2
Sensors
Annotations
Front Plane
Top Plane
Right Plane
Origin
Extrude1
(-) Sketch1
DrawCompare...
SolidWorks Explorer...
DriveWorksXpress...
DFMXpress...
SimulationXpress...
FloXpress...
Format Painter...
Select
Invert Selection
Sketch Entities
Sketch Tools
Sketch Settings
Blocks
Spline Tools
Dimensions
Relations
Measure...
Mass Properties...
Section Properties...
Sensor
Check...
Feature Statistics...
Equations...
Import Diagnostics...
Deviation Analysis...
DimXpert
Line
Rectangle
Center Rectangle
3 Point Corner Rectangle
3 Point Center Rectangle
Parallelogram
Straight Slot
Centerpoint Straight Slot
3 Point Arc Slot
Centerpoint Arc Slot
Polygon
Circle
Perimeter Circle
Centerpoint Arc
Tangent Arc
3 Point Arc
Ellipse
Partial Ellipse
Parabola

Fig_2-3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Parameters
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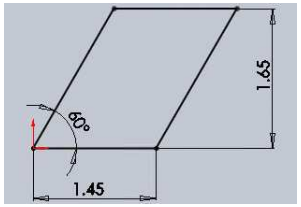
Fig_2-4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1.45

Fig_2-5

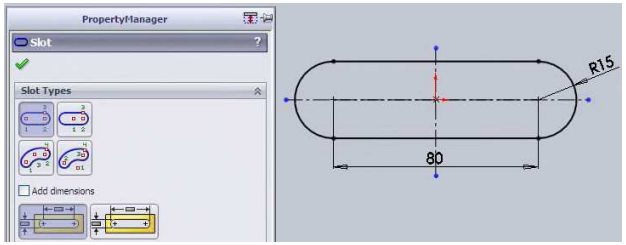


Fig_2-6

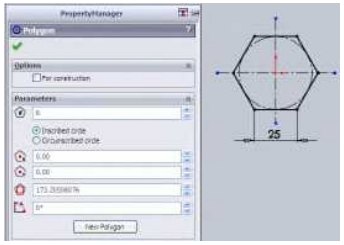


Fig_2-7

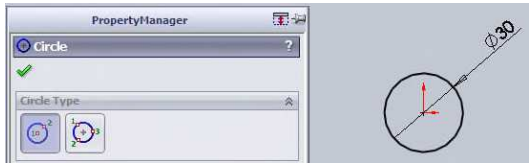


Fig_2-8

Fig_2-10

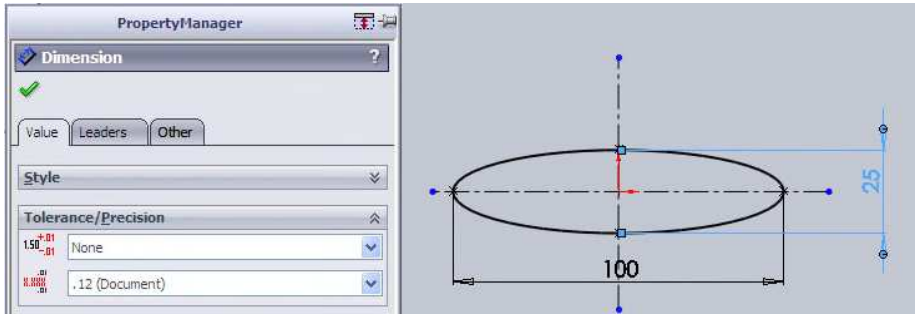


Fig_2-11

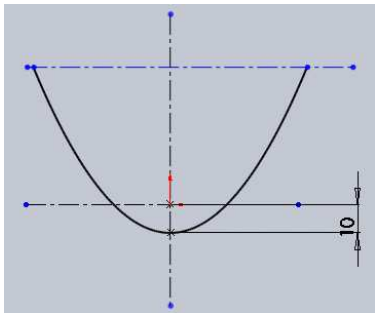
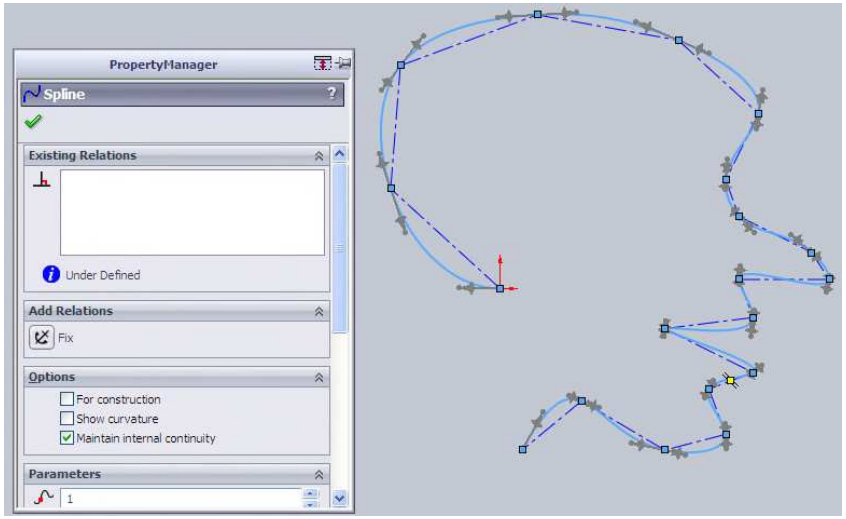


Fig_2-13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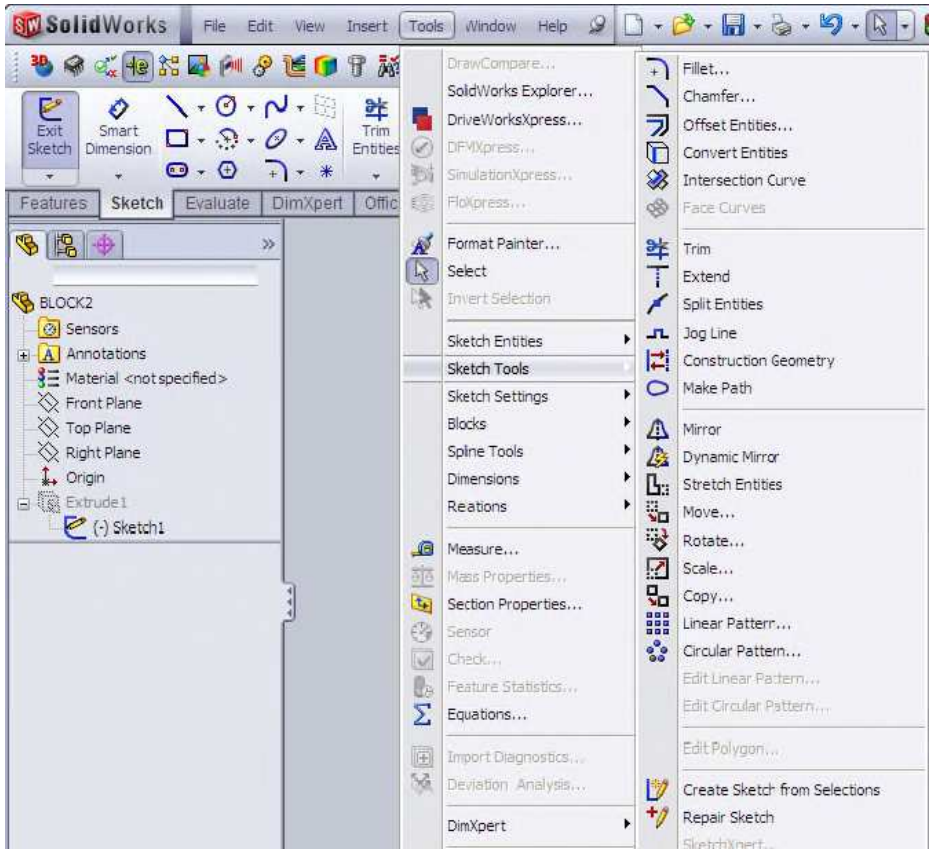
Add Relations
Fix
Options
For construction
Show curvature
Maintain internal continuity
Parameters
1

Fig_2-14


SolidWorks
File
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View
Insert
Tools
Window
Help
Exit Sketch
Smart Dimension
Trim Entities
Features
Sketch
Evaluate
DimXpert
BLOCK2
Sensors
Annotations
Material <not specified>
Front Plane
Top Plane
Right Plane
Origin
Extrude1
(-) Sketch1
DrawCompare...
SolidWorks Explorer...
DriveWorksXpress...
DFMXpress...
SimulationXpress...
FloXpress...
Format Painter...
Select
Invert Selection
Sketch Entities
Sketch Tools
Sketch Settings
Blocks
Spline Tools
Dimensions
Reations
Measure...
Mass Properties...
Section Properties...
Sensor
Check...
Feature Statistics...
Equations...
Import Diagnostics...
Deviation Analysis...
DimXpert
Fillet...
Chamfer...
Offset Entities...
Convert Entities
Intersection Curve
Face Curves
Trim
Extend
Split Entities
Jog Line
Construction Geometry
Make Path
Mirror
Dynamic Mirror
Stretch Entities
Move...
Rotate...
Scale...
Copy...
Linear Patterr...
Circular Pattern...
Edit Linear Pattern...
Edit Circular Pattern...
Edit Polygon...
Create Sketch from Selections
Repair Sketch

Fig_2-18

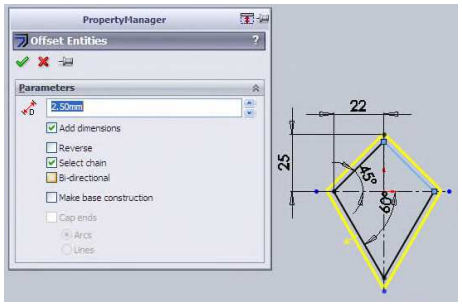

Fig_2-26

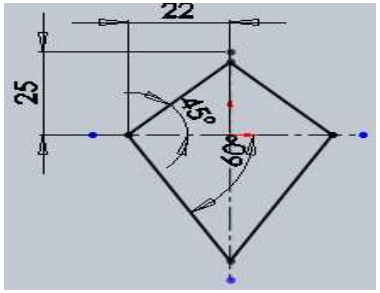

Fig_2-33

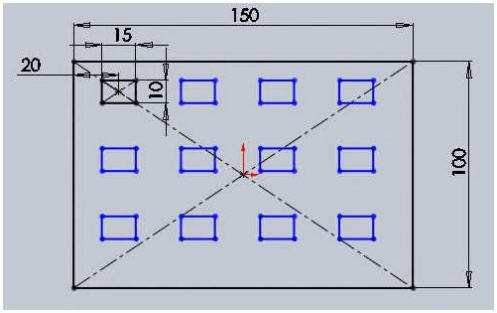

Fig_2-34

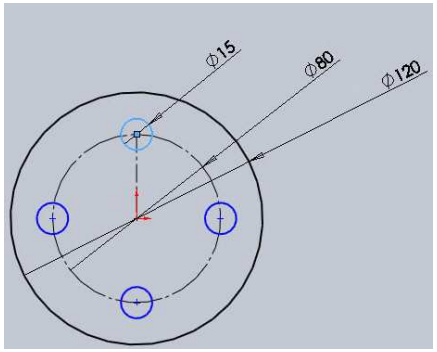

Fig_2-P10

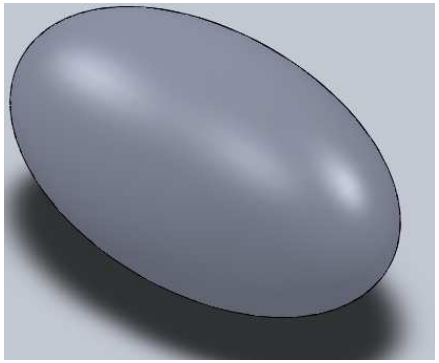

Fig_2-P11