

ME 1403 Engineering Practice & Graphics

Lecture 7

Chapter-5

Instructor:

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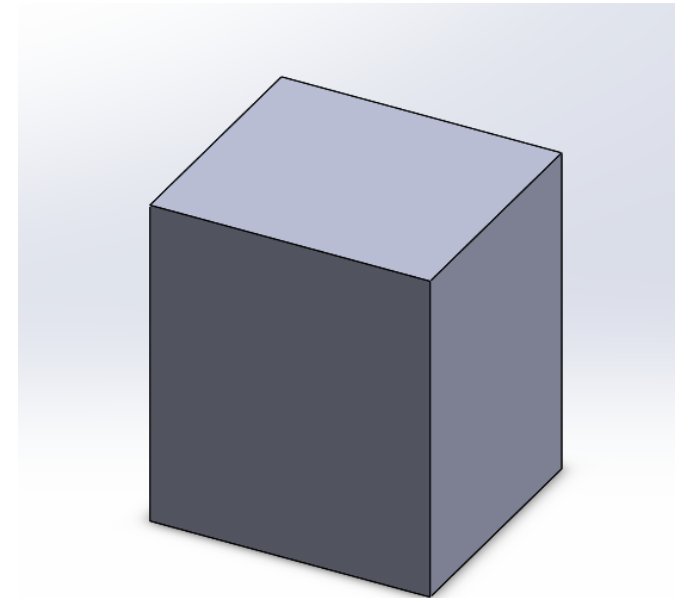
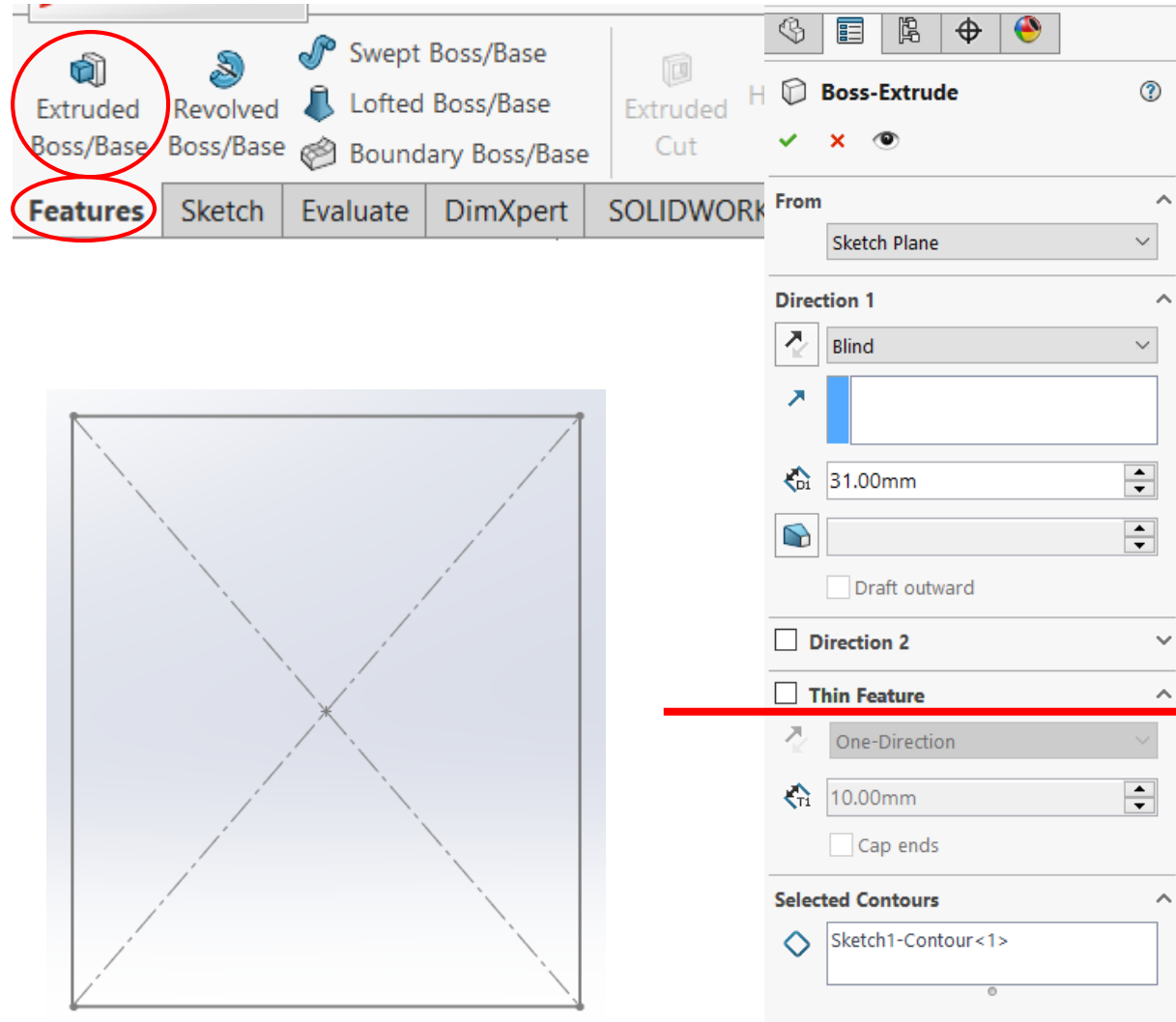
Midterm Exam!

- Syllabus: Chapter-2,3,4
- Time: 45 minutes
- Questions:
 - 2 sketches

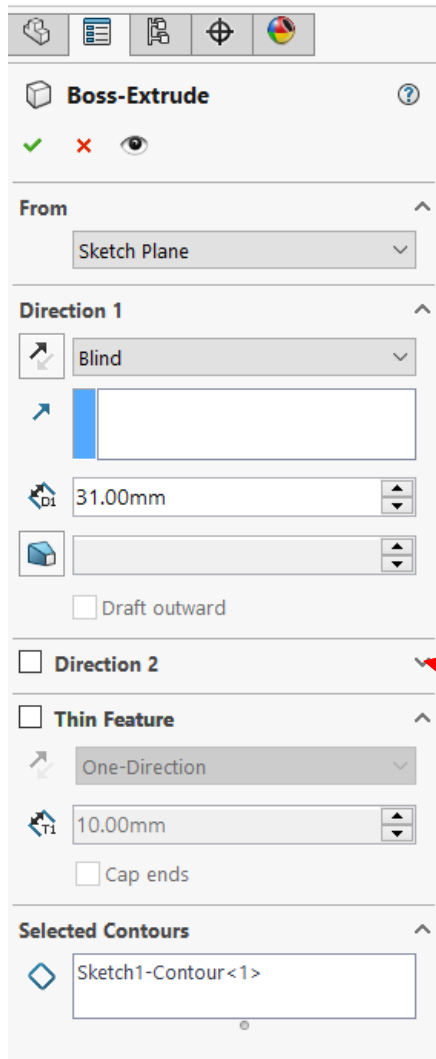
Outline

- Tools / Methods
 - Extrude
 - Thin Feature
 - Revolve
 - Material
 - Section Properties / Mass Properties
- Discussion
 - Questions till Now
 - Mid-Term Exam!

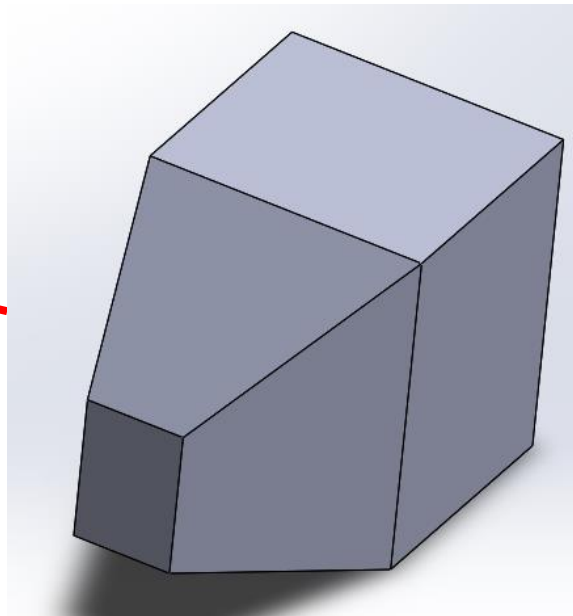
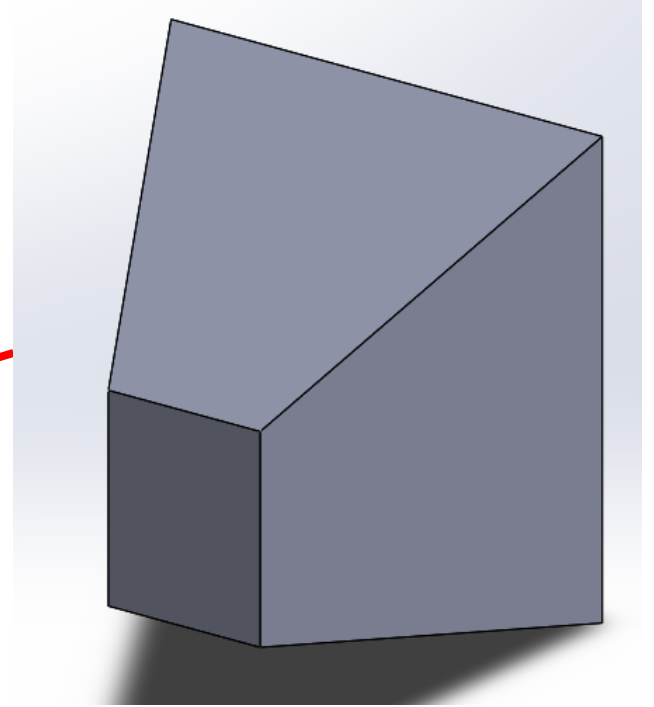
Extrude



Extrude (Draft Angle/ Direction 2)



20 degree



Thin Extrude

Extruded Boss/Base Revolved Boss/Base Swept Boss/Base Lofted Boss/Base Boundary Boss/Base

Features Sketch Evaluate DimXpert SOLIDWORKS

Boss-Extrude

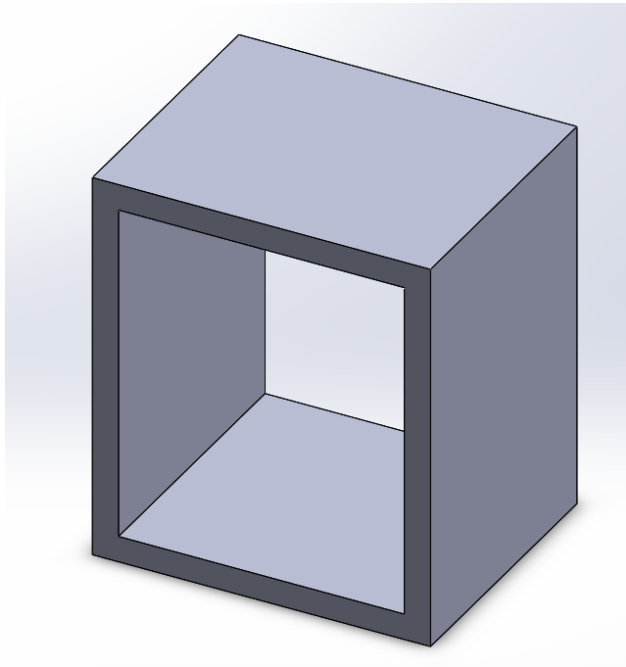
From: Sketch Plane

Direction 1: Blind, 53.00mm

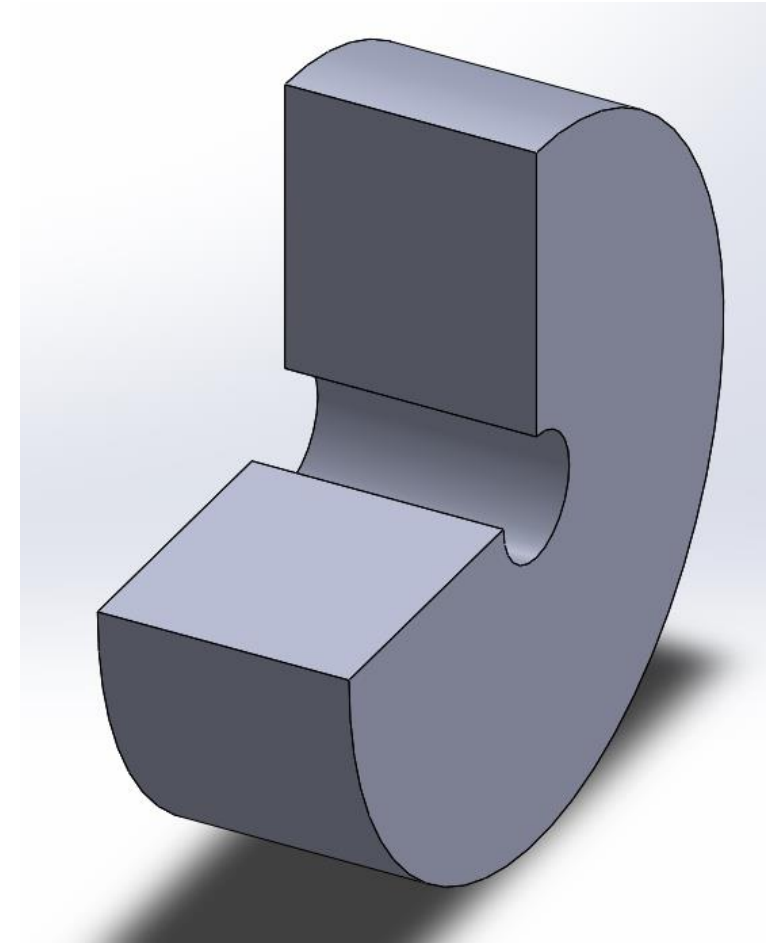
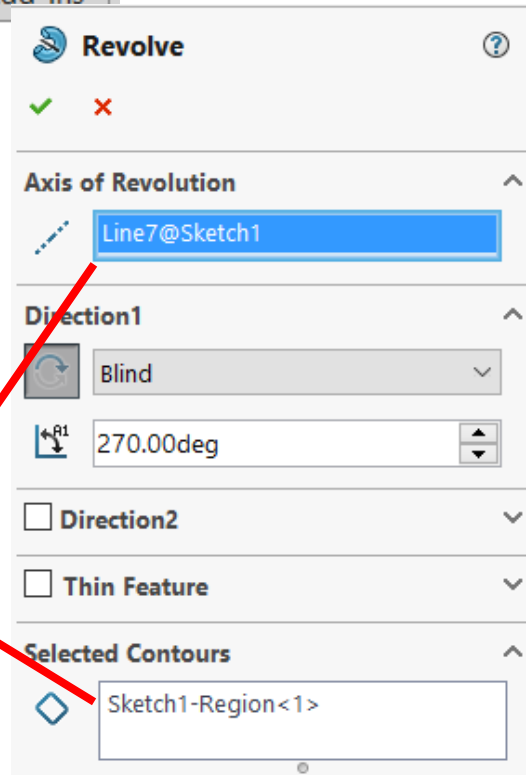
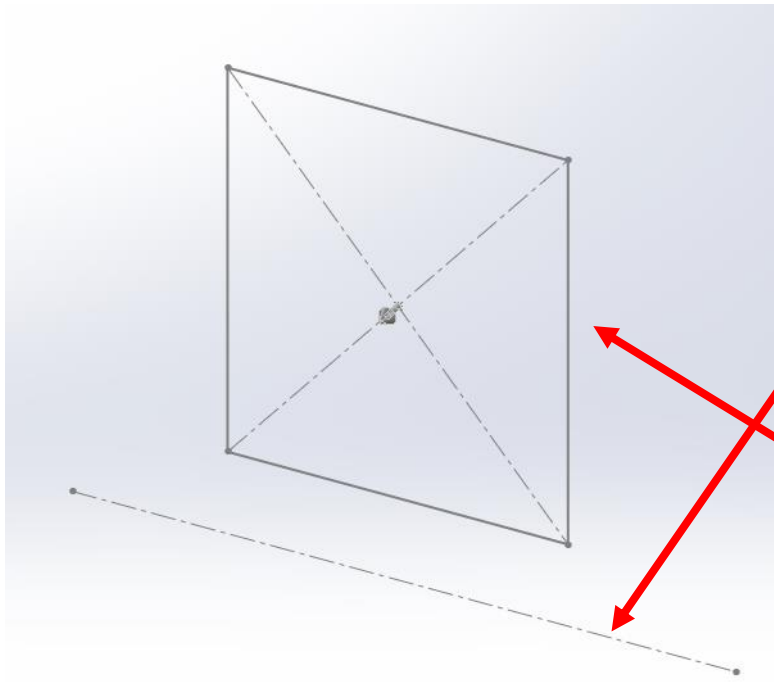
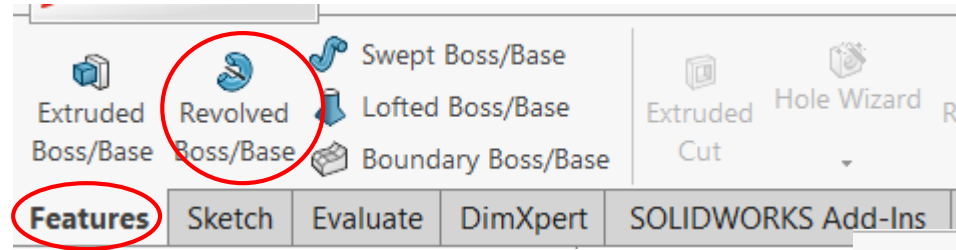
Thin Feature

Mid-Plane, 5.00mm, Cap ends

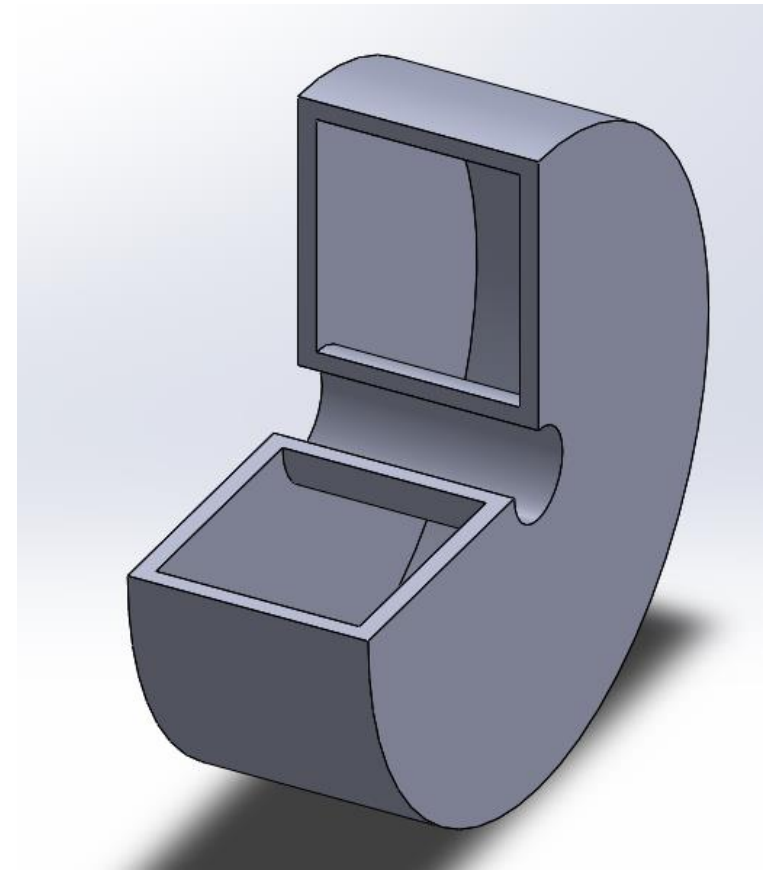
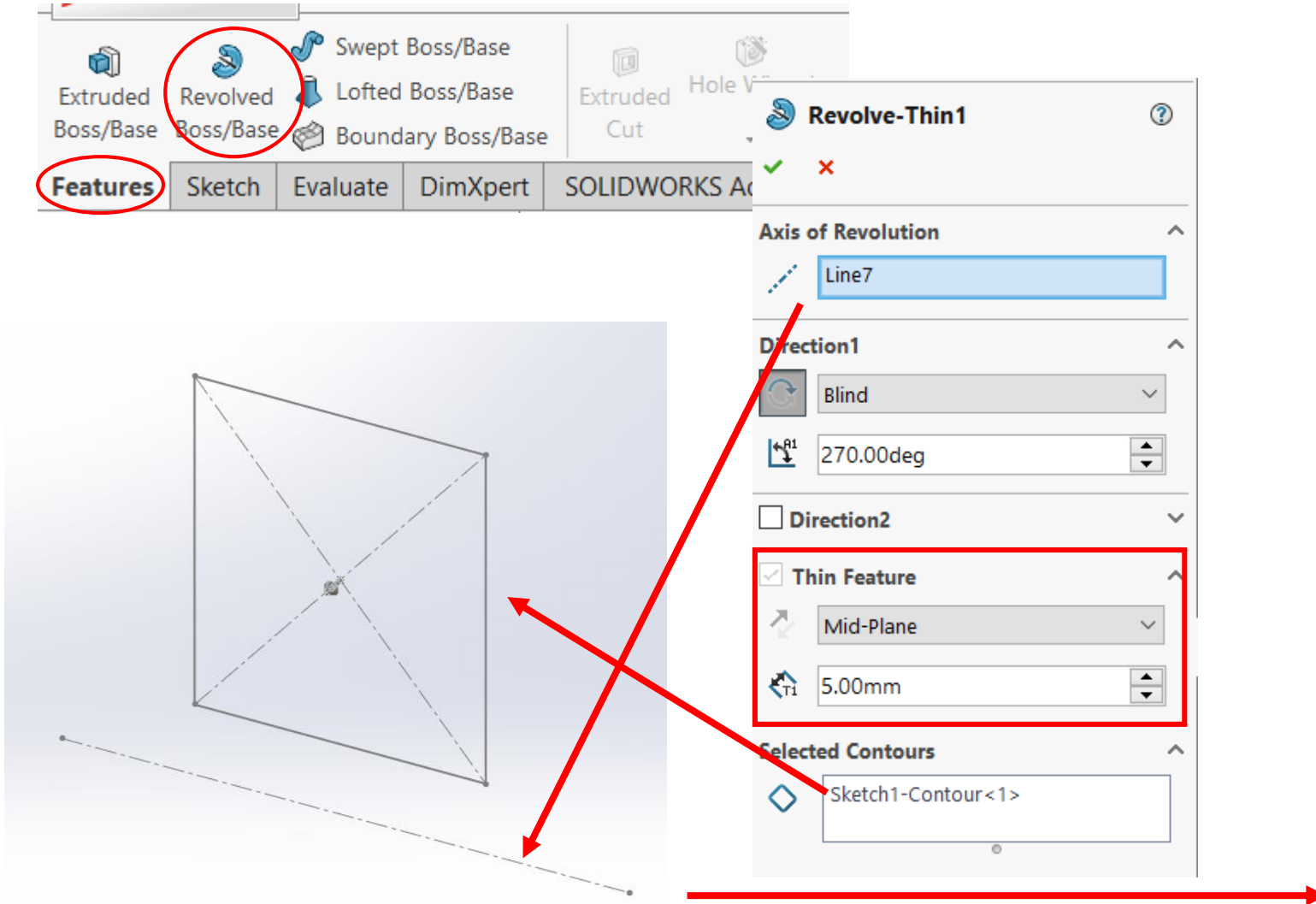
Selected Contours: Sketch1-Contour<1>



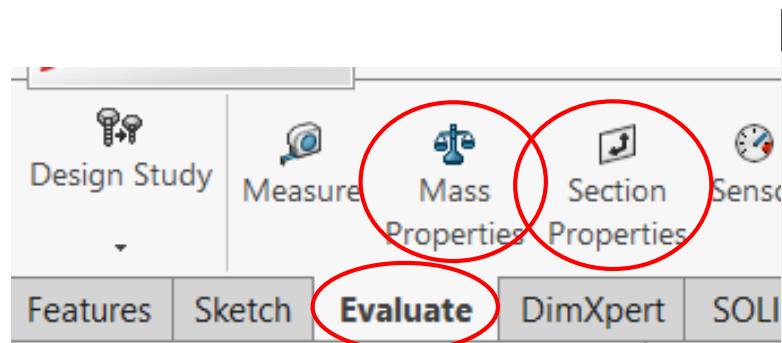
Revolve



Thin Revolve



Section Properties / Mass Properties



Section Properties

Face<1>

Options...

Recalculate

Report coordinate values relative to: -- default --

Section properties of the selected face of Part1

Area = 3605.12 millimeters²

Centroid relative to output coordinate system origin: (millimeters)

X = 0.00
Y = 30.21
Z = 0.00

Moments of inertia of the area, at the centroid: (millimeters ⁴)

Lxx = 288709.87	Lxy = 0.00	Lxz = 0.00
Lyx = 0.00	Lyy = 4351775.66	Lyz = 0.00
Lzx = 0.00	Lzy = 0.00	Lzz = 4063065.79

Polar moment of inertia of the area, at the centroid = 4351775.66 millimeters ⁴

Angle between principal axes and part axes = 90.00 degrees

Principal moments of inertia of the area, at the centroid: (millimeters ⁴)

lx = 288709.87
ly = 4063065.79

Moments of inertia of the area, at the output coordinate system: (millimeters ⁴)

LXX = 3579986.25	LXY = 0.00	LXZ = 0.00
LYX = 0.00	LYY = 4351775.66	LYZ = 0.00
LZX = 0.00	LZY = 0.00	LZZ = 7354342.16

Help Print... Copy to Clipboard

Mass Properties

Part1.SLDPRT

Options...

Override Mass Properties... Recalculate

Include hidden bodies/components

Create Center of Mass feature

Show weld bead mass

Report coordinate values relative to: -- default --

Mass properties of Part1

Configuration: Default

Coordinate system: -- default --

Density = 0.00 grams per cubic millimeter

Mass = 217.86 grams

Volume = 217857.20 cubic millimeters

Surface area = 25012.20 square millimeters

Center of mass: (millimeters)

X = 0.00
Y = 0.00
Z = 0.00

Principal axes of inertia and principal moments of inertia: (grams * square millimeters)

Taken at the center of mass.

lx = (1.00, 0.00, 0.00)	Px = 83743.98
ly = (0.00, 1.00, 0.00)	Py = 262977.70
lz = (0.00, 0.00, 1.00)	Pz = 311828.22

Moments of inertia: (grams * square millimeters)

Taken at the center of mass and aligned with the output coordinate system.

Lxx = 83743.98	Lxy = 0.00	Lxz = 0.00
Lyx = 0.00	Lyy = 262977.70	Lyz = 0.00
Lzx = 0.00	Lzy = 0.00	Lzz = 311828.22

Moments of inertia: (grams * square millimeters)

Taken at the output coordinate system.

lxx = 83743.98	lxy = 0.00	lxz = 0.00
lyx = 0.00	lyy = 262977.70	lyz = 0.00
lzx = 0.00	lzy = 0.00	lzz = 311828.22

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