SRM
INSTITUTE OF SCIENCE & TECHNOLOGY
(Deemed to be University u/s 3 of UGC Act, 1956)

18MES105L – Engineering Graphics and Design

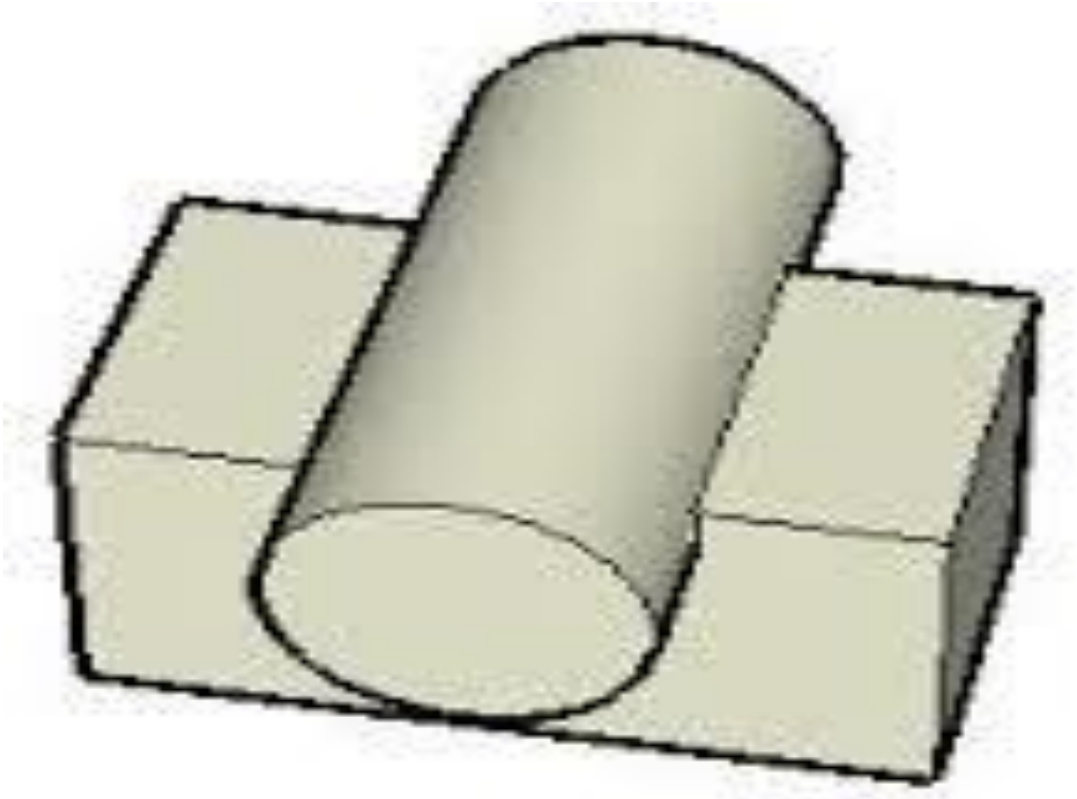
Exercise – 8

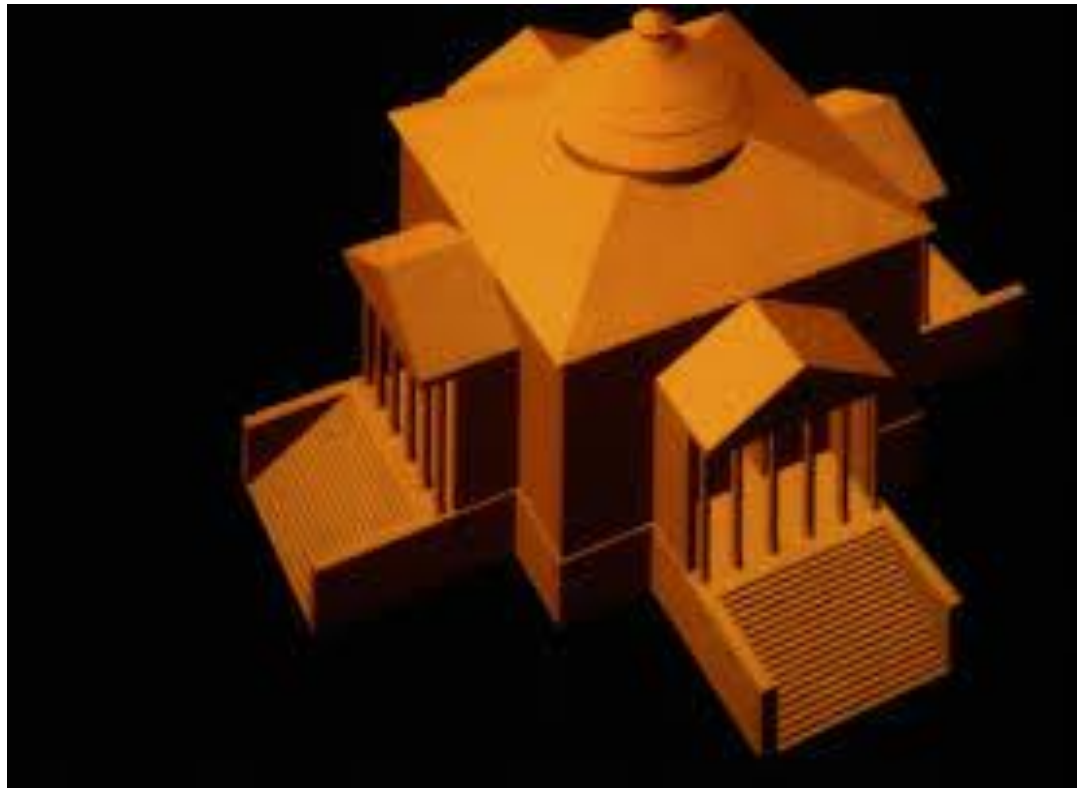
Combination of Solids – 2

Applications of combination of solids

- Solid modeling allows for the automation of several difficult engineering calculations that are carried out as a part of the design process
- Solid modeling is one of the most important applications of the drafting software and it has been becoming increasingly popular of late.
- The solid modeling CAD software helps the designer to see the designed object as if it were the real manufactured product.
- Solid modeling can be seen from various directions and in various views.
- Helps the designer to be sure that the object looks exactly as they wanted it to be.
- Also gives additional vision to the designer as to what more changes can be done in the object.

Combination of solid shapes

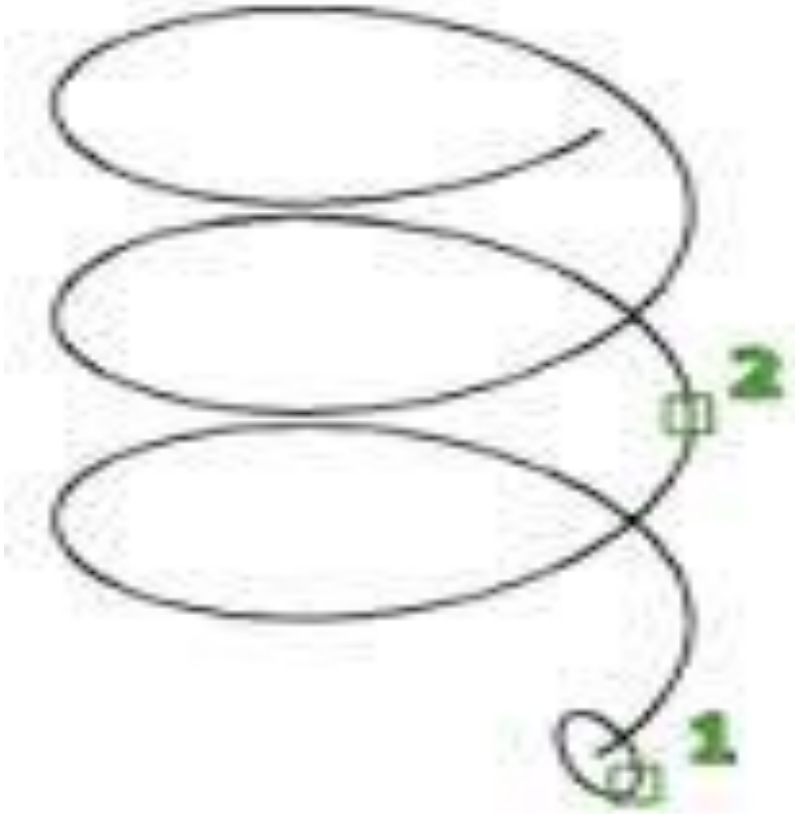


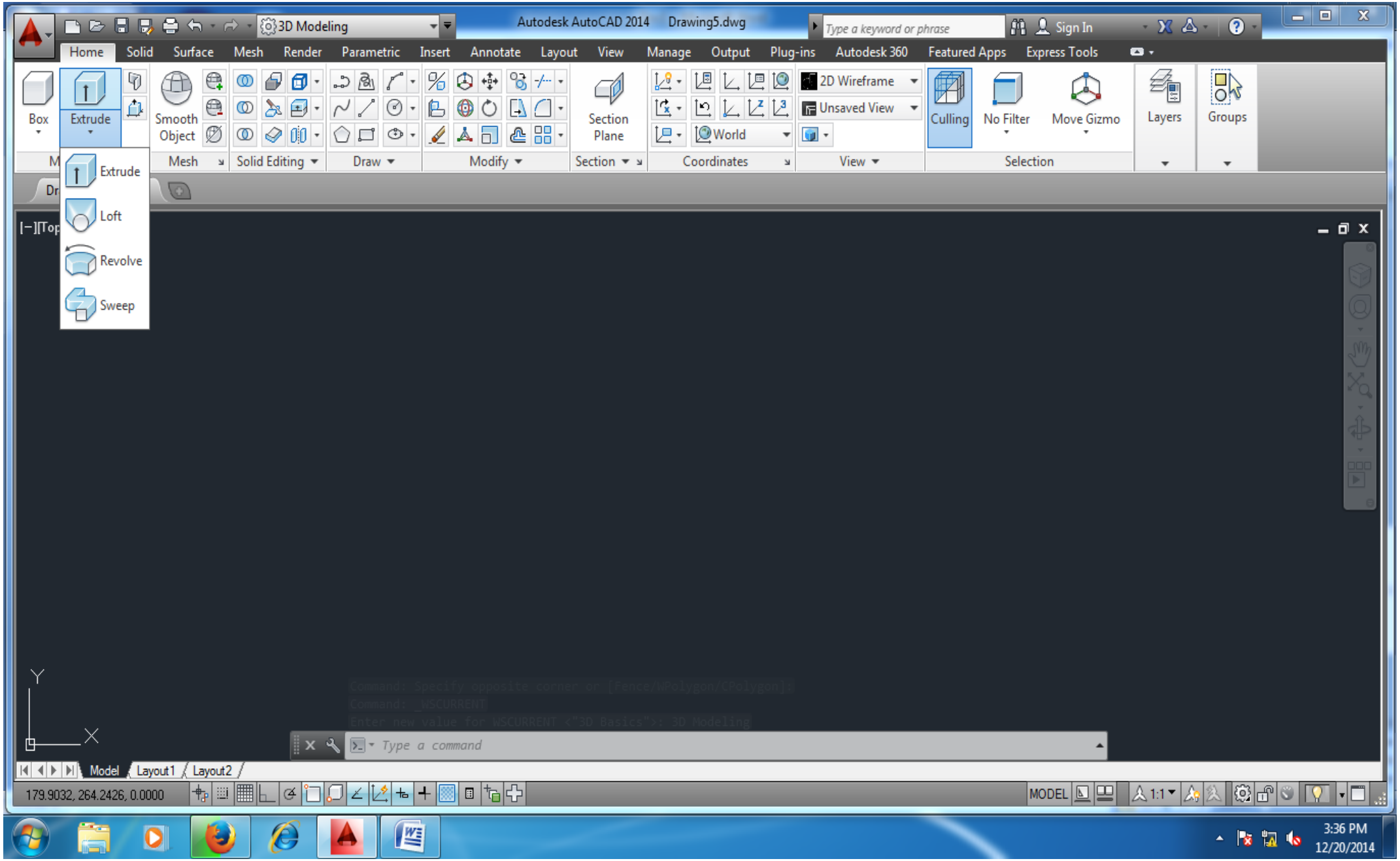


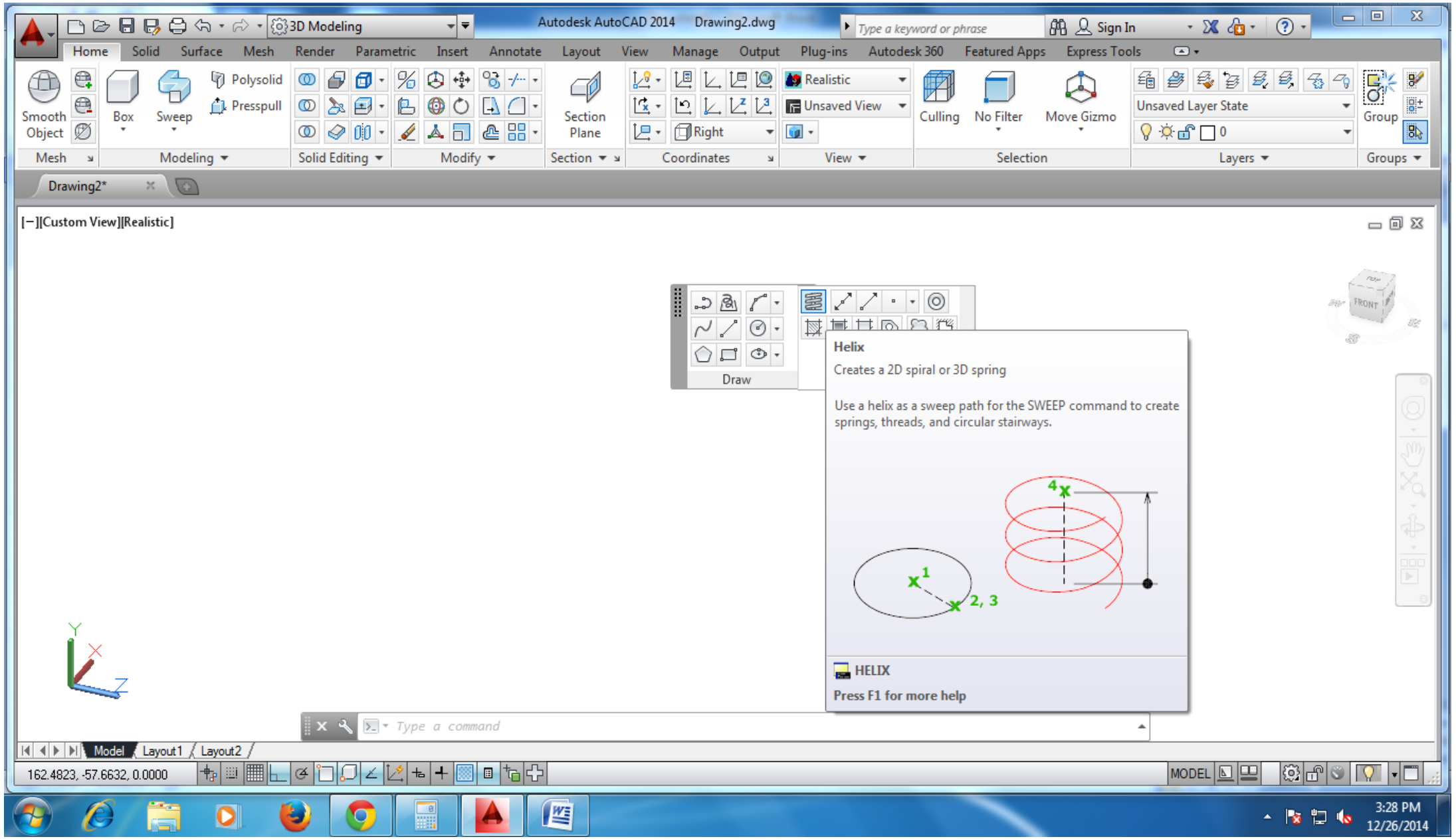
Sweep command

- With the SWEEP command, you can create a new solid or surface by sweeping an open or closed planar curve (profile) along an open or closed 2D or 3D path.
- SWEEP draws a solid or surface in the shape of the specified profile along the specified path.
- You can sweep more than one object, but they all must lie on the same plane.
- When you select an object to sweep, it is automatically aligned to the object that is used as the path.

Sweep



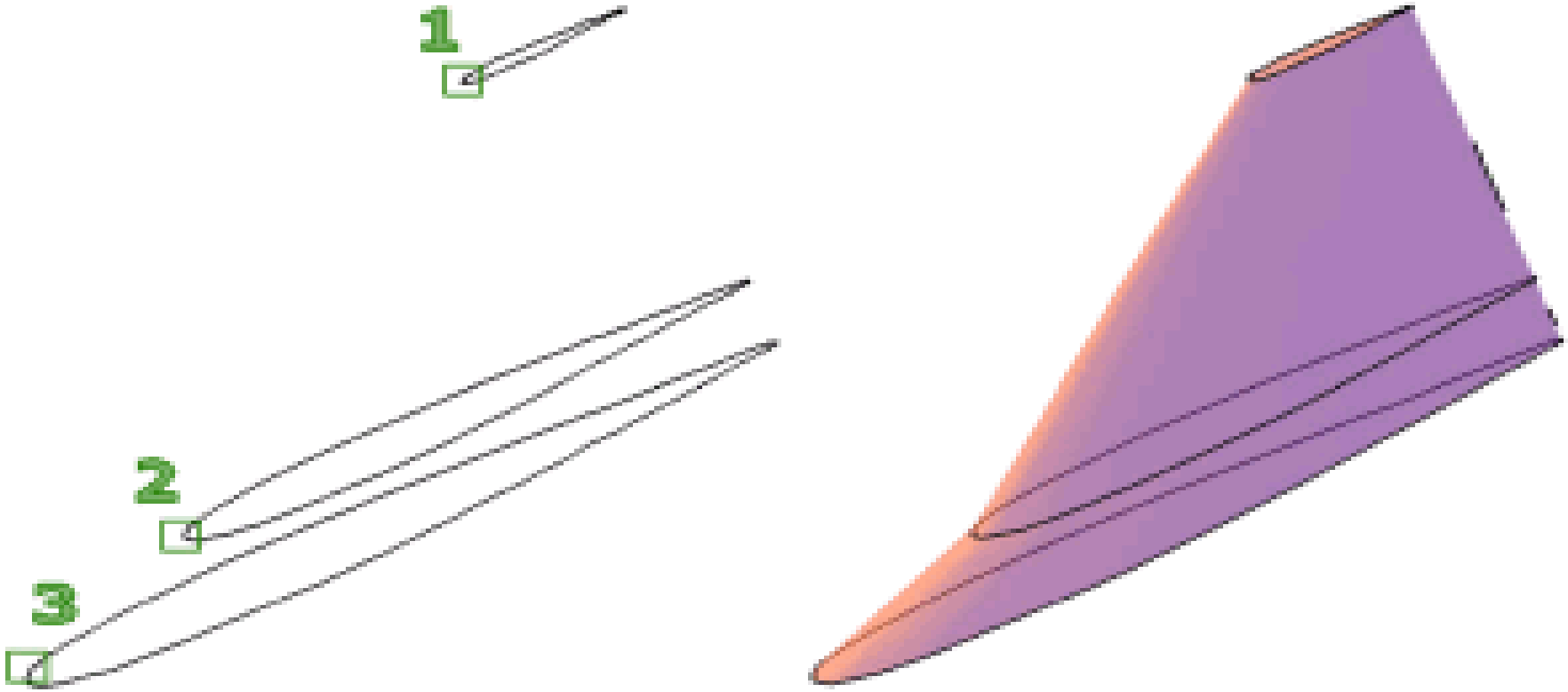

3D Modeling
Autodesk AutoCAD 2014 Drawing5.dwg
Type a keyword or phrase
Sign In
Home
Solid
Surface
Mesh
Render
Parametric
Insert
Annotate
Layout
View
Manage
Output
Plug-ins
Autodesk 360
Featured Apps
Express Tools
Box
Extrude
Smooth Object
Section Plane
2D Wireframe
Unsaved View
World
Culling
No Filter
Move Gizmo
Layers
Groups
Mesh
Solid Editing
Draw
Modify
Section
Coordinates
View
Selection
Extrude
Loft
Revolve
Sweep
[−][Top]
Command: Specify opposite corner or [Fence/WPolygon/CPolygon]:
Command: _WSCURRENT
Enter new value for WSCURRENT <"3D Basics">: 3D Modeling
Type a command
Model
Layout1
Layout2
179.9032, 264.2426, 0.0000
MODEL
1:1
3:36 PM
12/20/2014


3D Modeling
Autodesk AutoCAD 2014 Drawing2.dwg
Type a keyword or phrase
Sign In
Home Solid Surface Mesh Render Parametric Insert Annotate Layout View Manage Output Plug-ins Autodesk 360 Featured Apps Express Tools
Smooth Object
Box
Sweep
Polysolid
Presspull
Mesh
Modeling
Solid Editing
Modify
Section Plane
Section
Coordinates
Realistic
Unsaved View
Right
View
Culling
No Filter
Move Gizmo
Selection
Unsaved Layer State
Layers
Group
Groups
Drawing2*
[−][Custom View][Realistic]
Draw
Helix
Creates a 2D spiral or 3D spring
Use a helix as a sweep path for the SWEEP command to create springs, threads, and circular stairways.
HELIX
Press F1 for more help
Type a command
Model Layout1 Layout2
162.4823, -57.6632, 0.0000
MODEL
3:28 PM
12/26/2014

Loft command

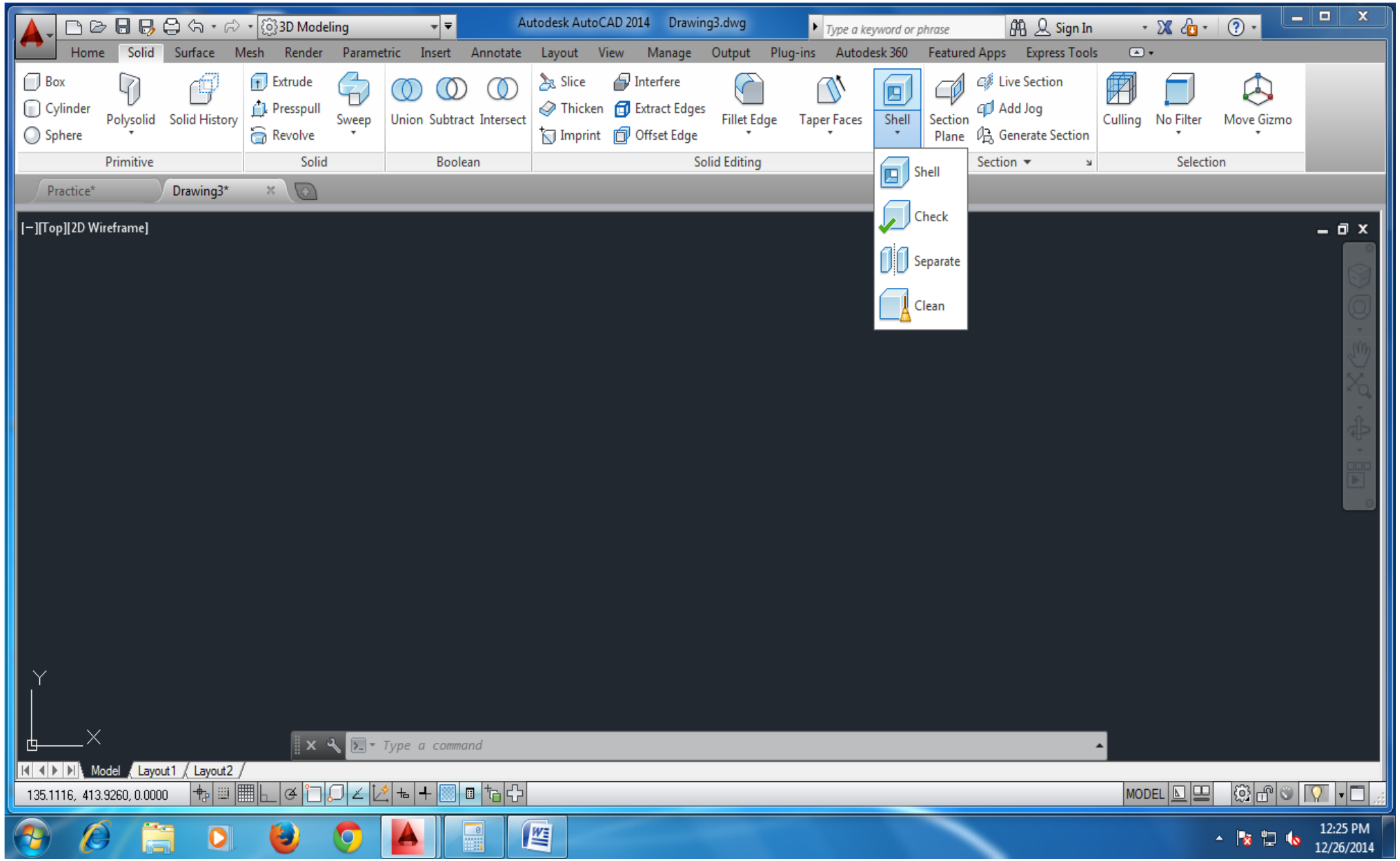
- The loft command makes a solid or surface between several cross sections.
- With the LOFT command, you can create a new solid or surface by specifying a series of cross sections.
- The cross sections define the profile (shape) of the resulting solid or surface. Cross sections (generally, curves or lines) can be open (for example, an arc) or closed (for example, a circle).
- LOFT draws a solid or surface in the space between the cross sections.
- You must specify at least two cross sections when you use the LOFT command.

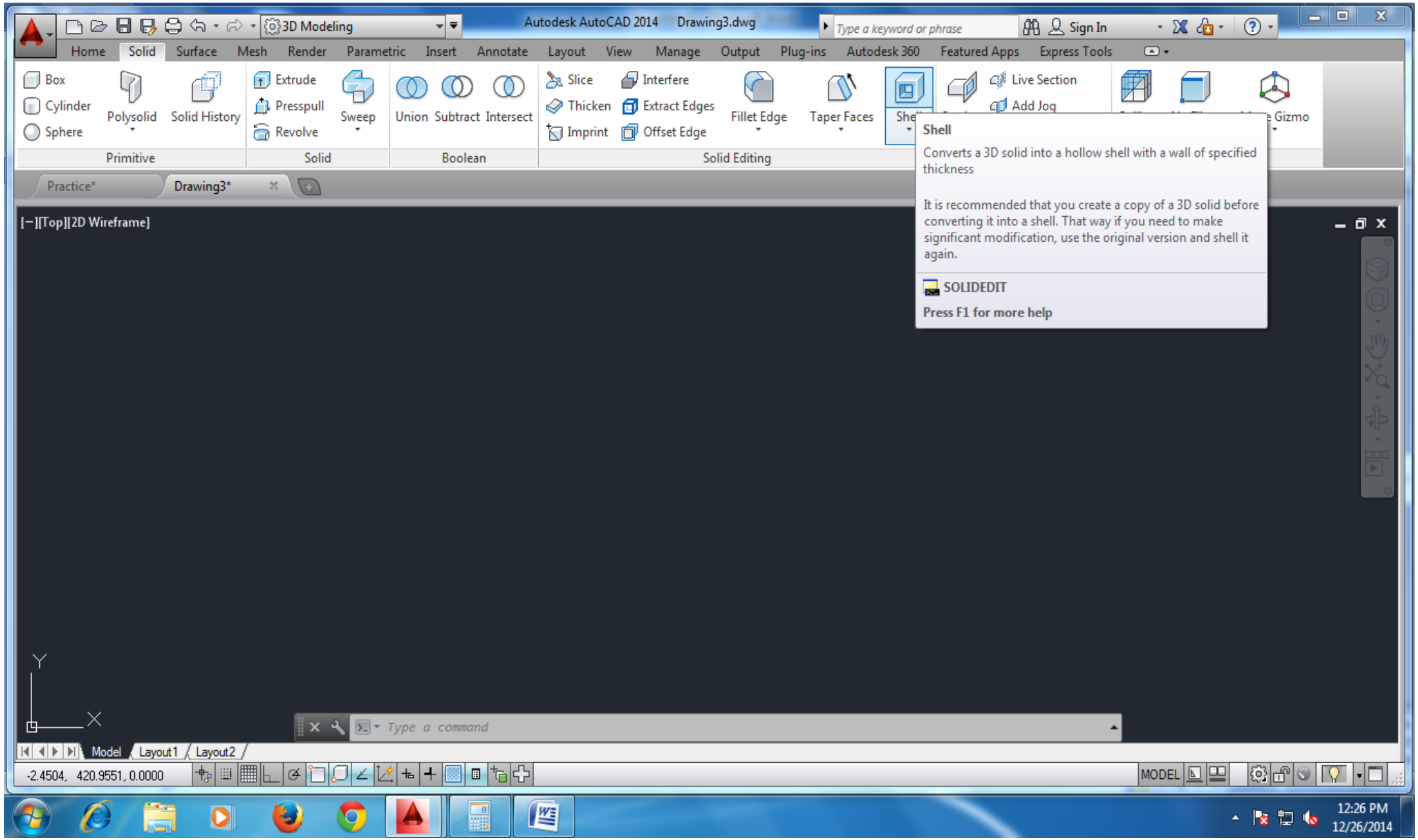
Loft command

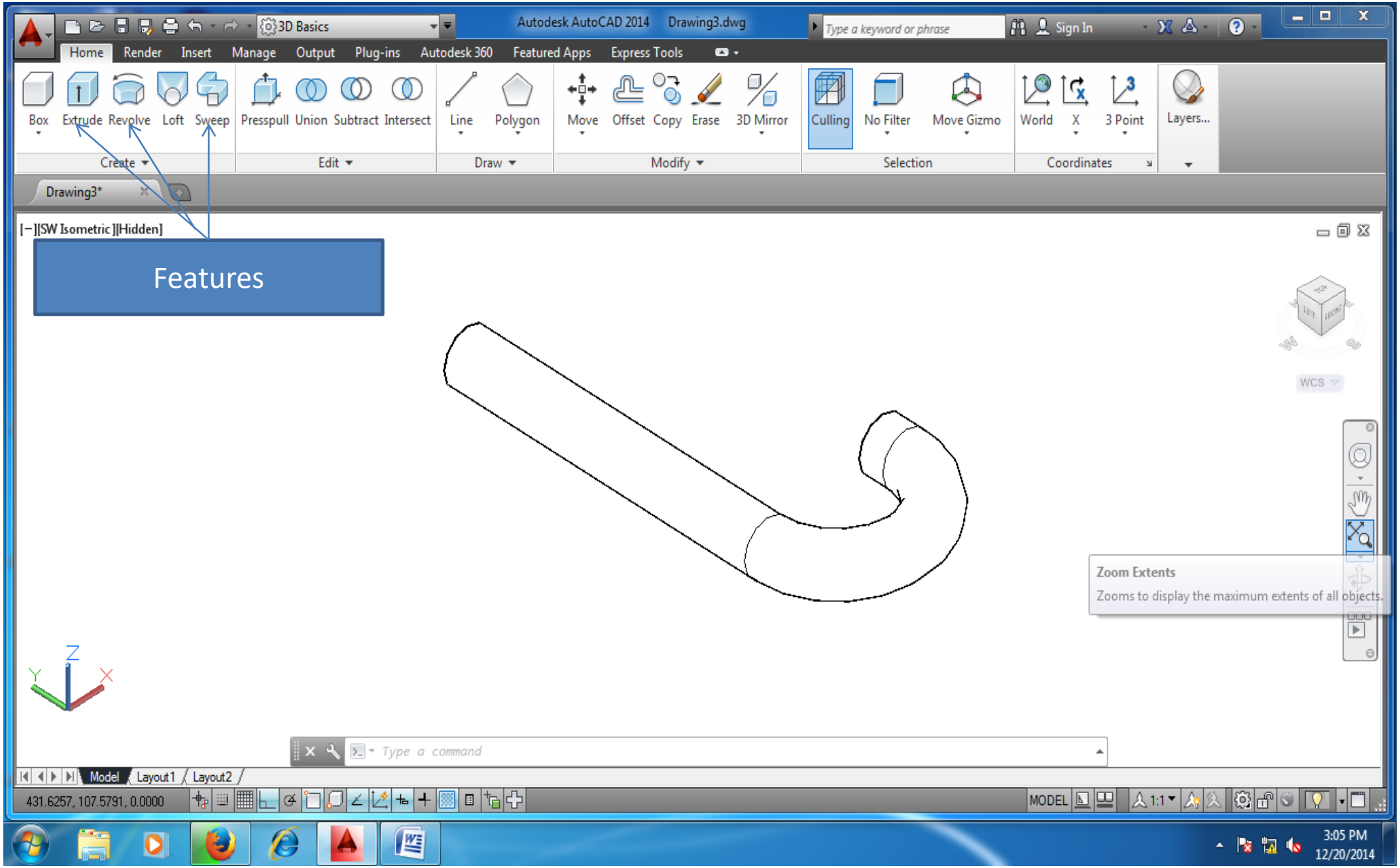


Shell command

Converts 3D solid into a hollow shell with a wall of specified thickness.

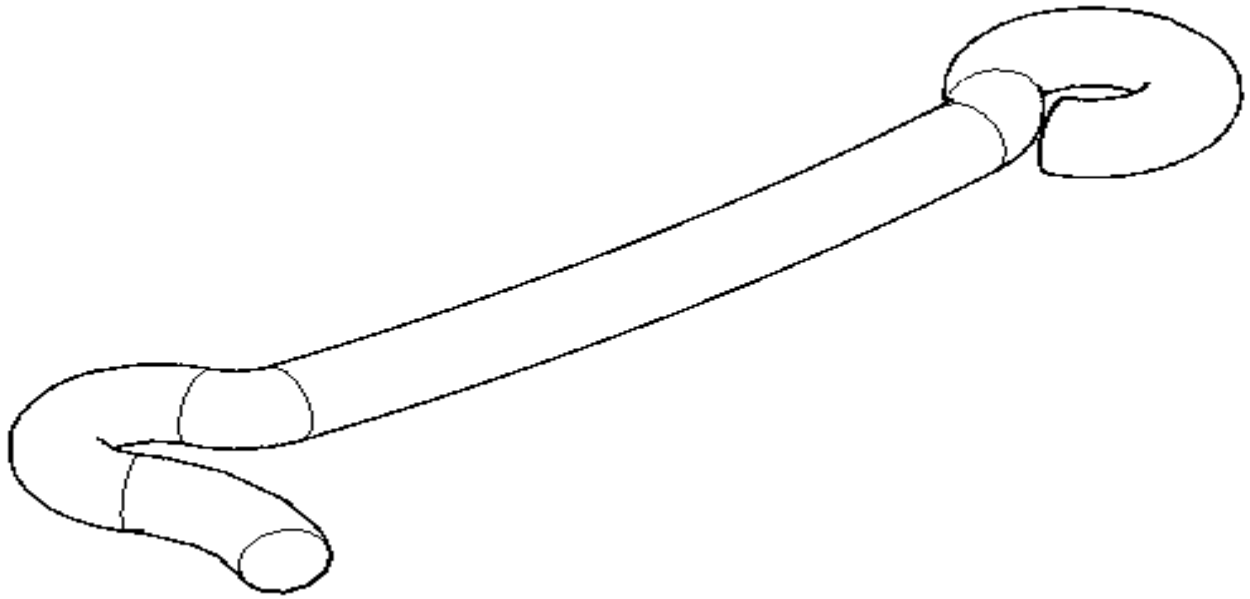

3D Modeling
Autodesk AutoCAD 2014 Drawing3.dwg
Type a keyword or phrase
Sign In
Home Solid Surface Mesh Render Parametric Insert Annotate Layout View Manage Output Plug-ins Autodesk 360 Featured Apps Express Tools
Box
Cylinder
Sphere
Polysolid
Solid History
Extrude
Presspull
Revolve
Sweep
Union
Subtract
Intersect
Slice
Thicken
Imprint
Interfere
Extract Edges
Offset Edge
Fillet Edge
Taper Faces
Shell
Section Plane
Live Section
Add Jog
Generate Section
Culling
No Filter
Move Gizmo
Primitive
Solid
Boolean
Solid Editing
Section
Selection
Shell
Check
Separate
Clean
Practice*
Drawing3*
[−][Top][2D Wireframe]
Type a command
Model
Layout1
Layout2
135.1116, 413.9260, 0.0000
MODEL
12:25 PM
12/26/2014


3D Modeling
Autodesk AutoCAD 2014 Drawing3.dwg
Type a keyword or phrase
Sign In
Home Solid Surface Mesh Render Parametric Insert Annotate Layout View Manage Output Plug-ins Autodesk 360 Featured Apps Express Tools
Box
Cylinder
Sphere
Polysolid
Solid History
Primitive
Extrude
Presspull
Revolve
Sweep
Solid
Union
Subtract
Intersect
Boolean
Slice
Thicken
Imprint
Interfere
Extract Edges
Offset Edge
Fillet Edge
Taper Faces
Solid Editing
Live Section
Add Jog
Gizmo
Shell
Converts a 3D solid into a hollow shell with a wall of specified thickness
It is recommended that you create a copy of a 3D solid before converting it into a shell. That way if you need to make significant modification, use the original version and shell it again.
SOLIDEDIT
Press F1 for more help
Practice*
Drawing3*
[−][Top][2D Wireframe]
Type a command
Model
Layout1
Layout2
-2.4504, 420.9551, 0.0000
MODEL
12:26 PM
12/26/2014

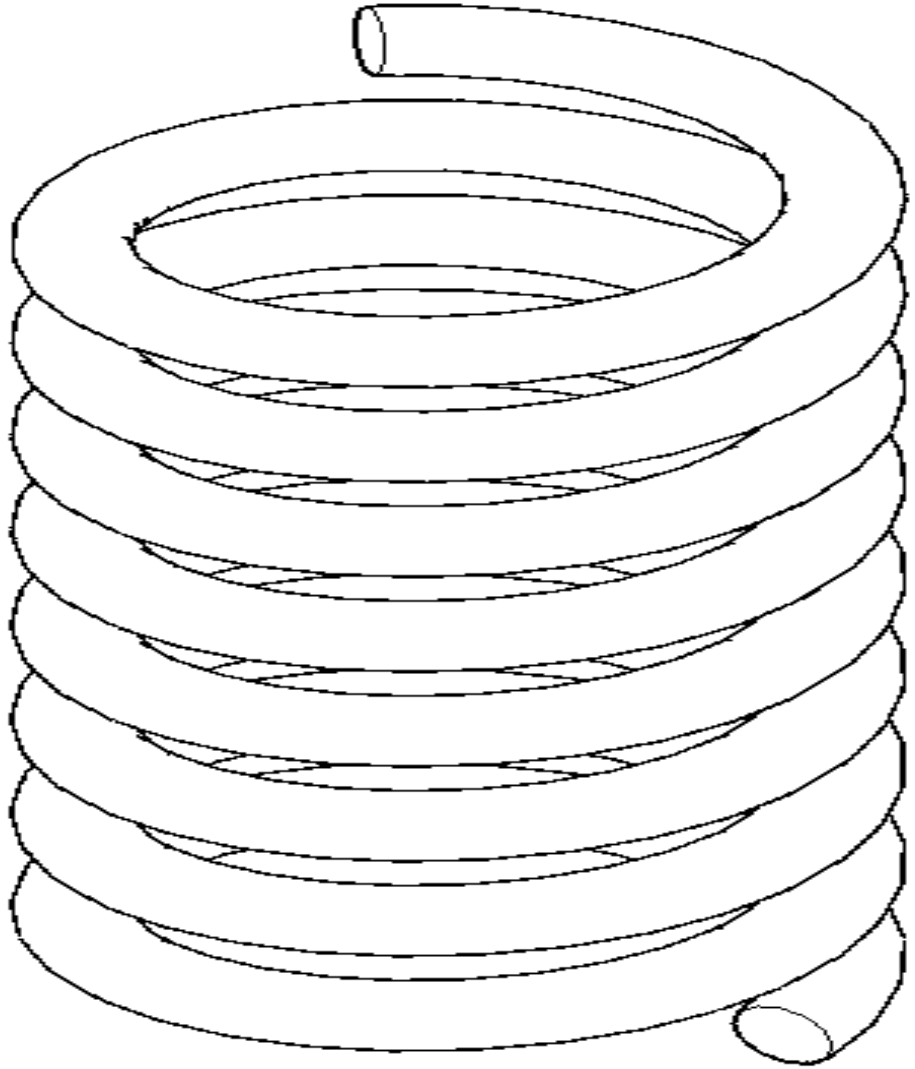

3D Basics
Autodesk AutoCAD 2014
Drawing3.dwg
Type a keyword or phrase
Sign In
Home
Render
Insert
Manage
Output
Plug-ins
Autodesk 360
Featured Apps
Express Tools
Box
Extrude
Revolve
Loft
Sweep
Presspull
Union
Subtract
Intersect
Line
Polygon
Move
Offset
Copy
Erase
3D Mirror
Culling
No Filter
Move Gizmo
World
X
3 Point
Layers...
Create
Edit
Draw
Modify
Selection
Coordinates
Drawing3*
[−][SW Isometric][Hidden]
Features
WCS
Zoom Extents
Zooms to display the maximum extents of all objects.
Type a command
Model
Layout1
Layout2
431.6257, 107.5791, 0.0000
MODEL
1:1
3:05 PM
12/20/2014

Q.No.1-Model using Drafting package

sweep command

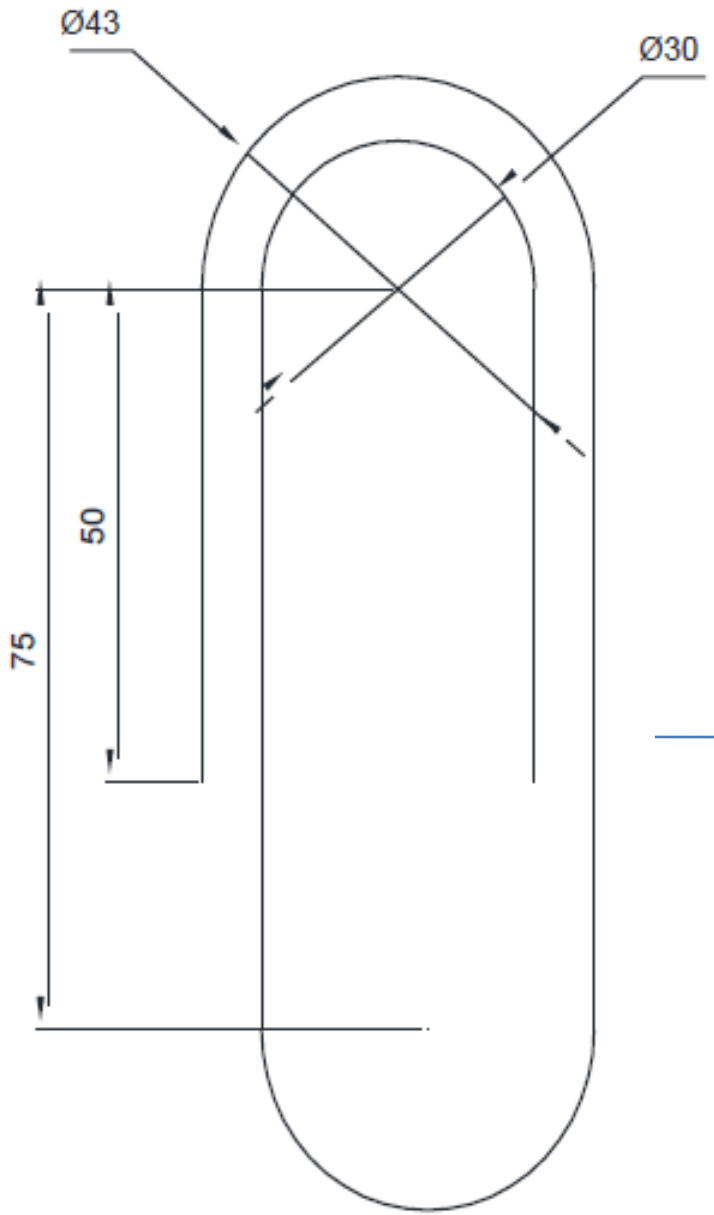


Q.No.2(a)-Model using Drafting package

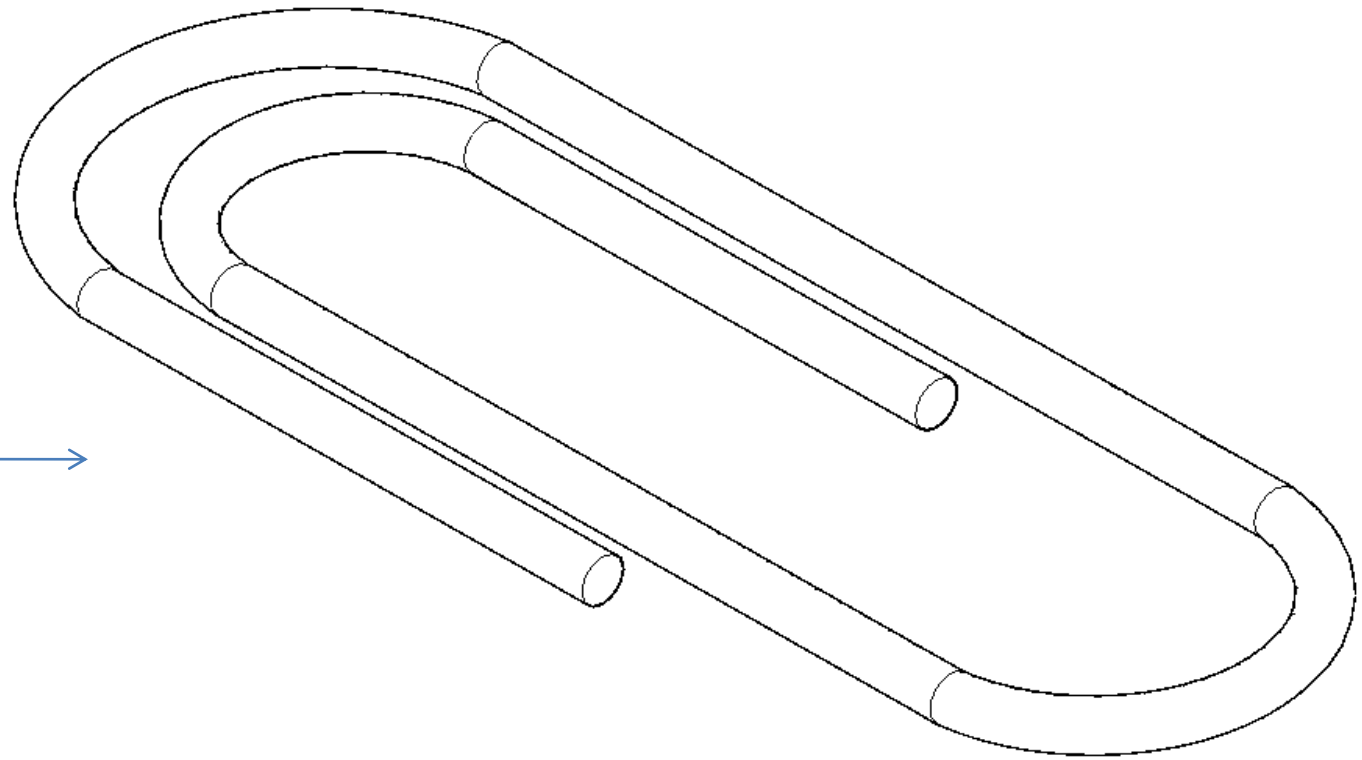


Helical sweep command

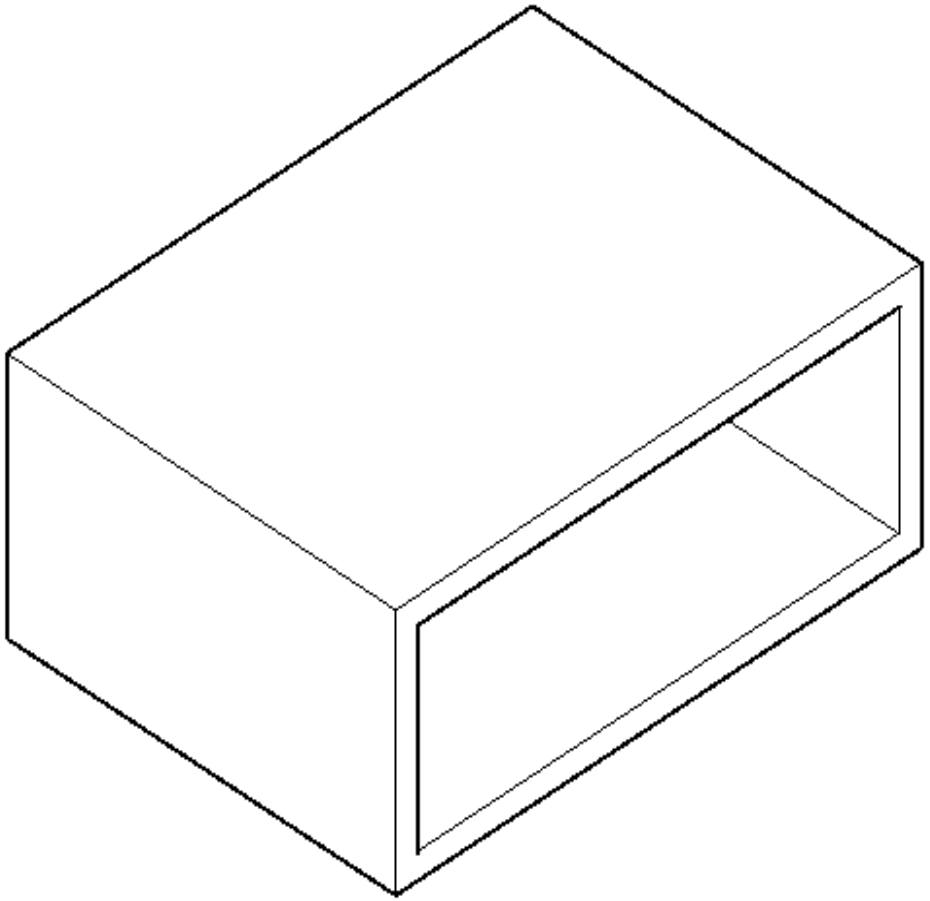
Q.No.2(b)-Model using Drafting package



Sweep command

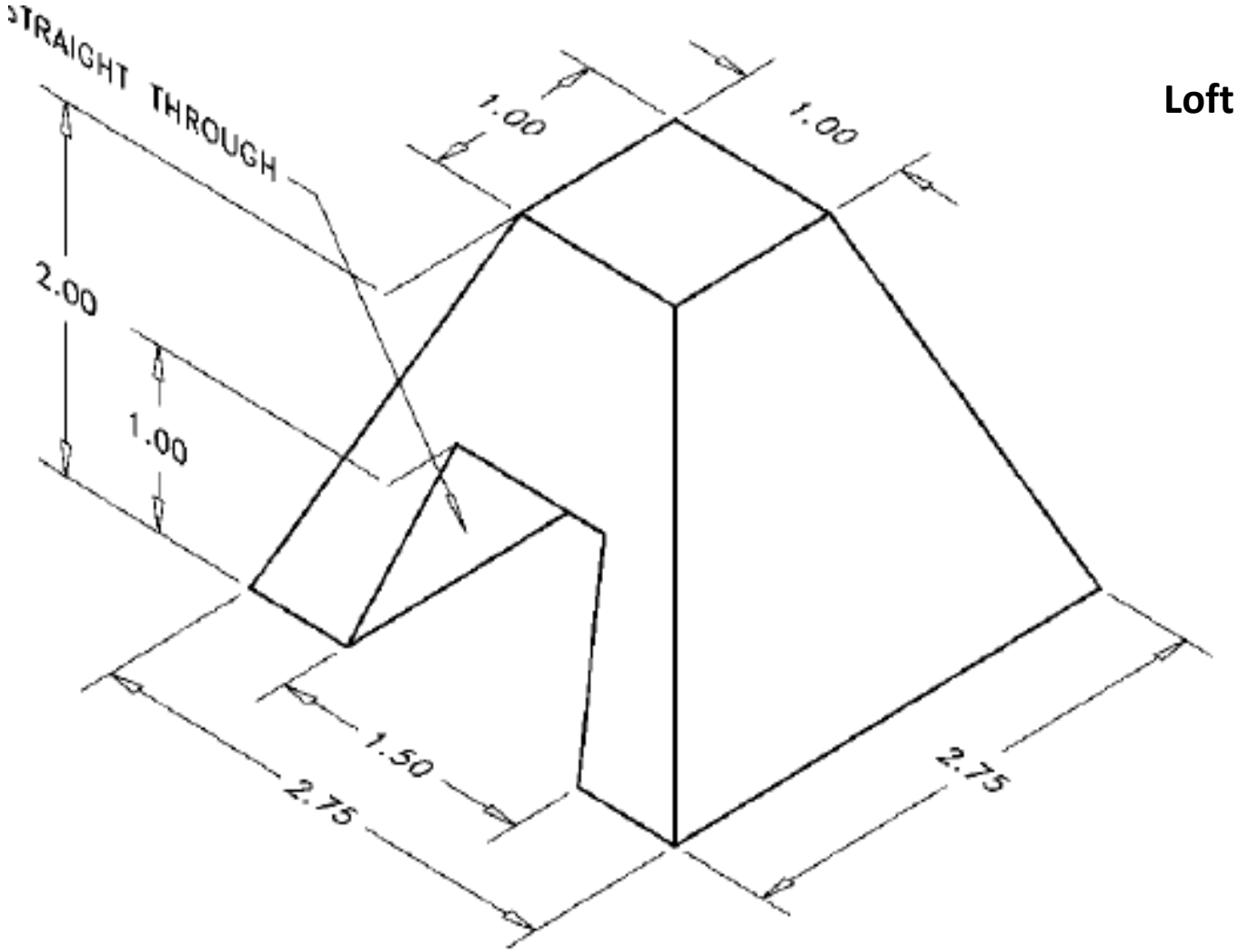


Q.No.3-Model using Drafting package



Shell command

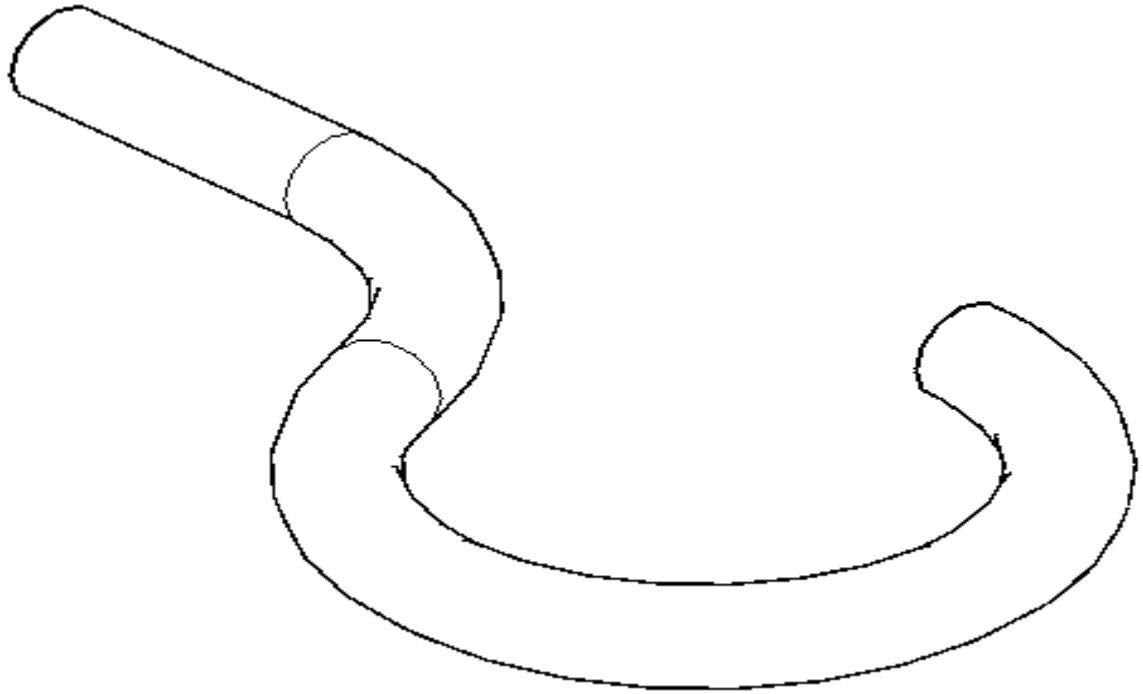
Q.No.4-Model using Drafting package



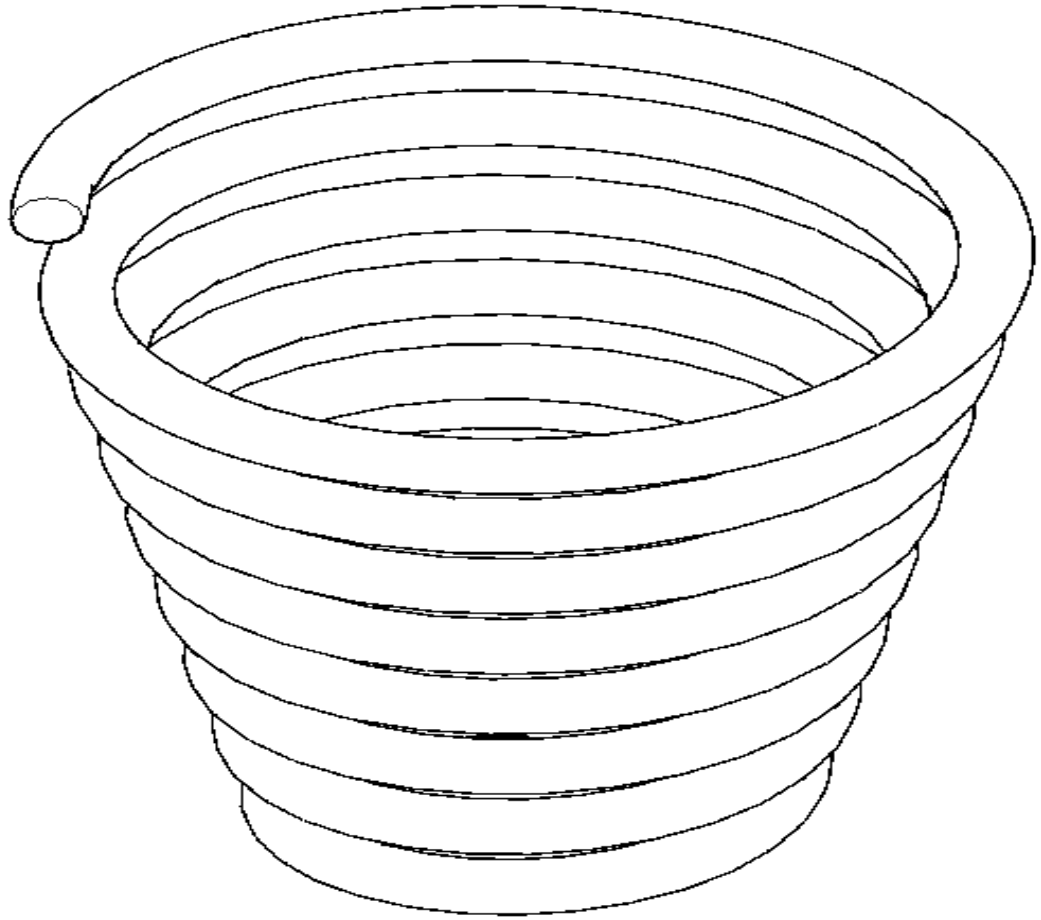
Loft command

Q.No.5-Model using Drafting package

sweep command

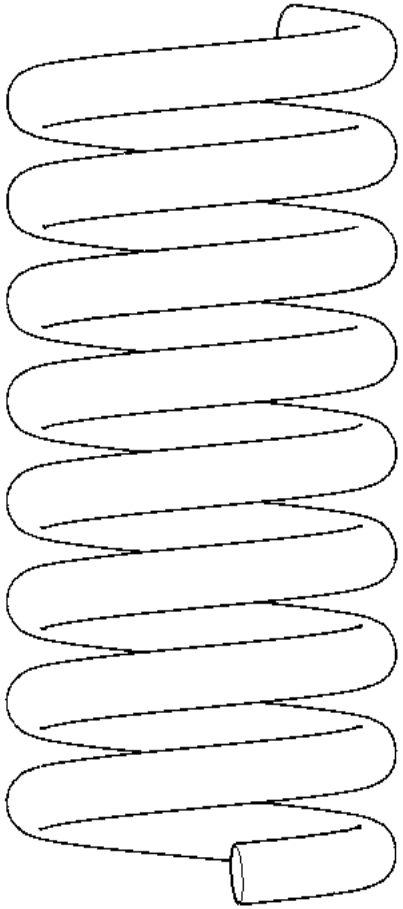


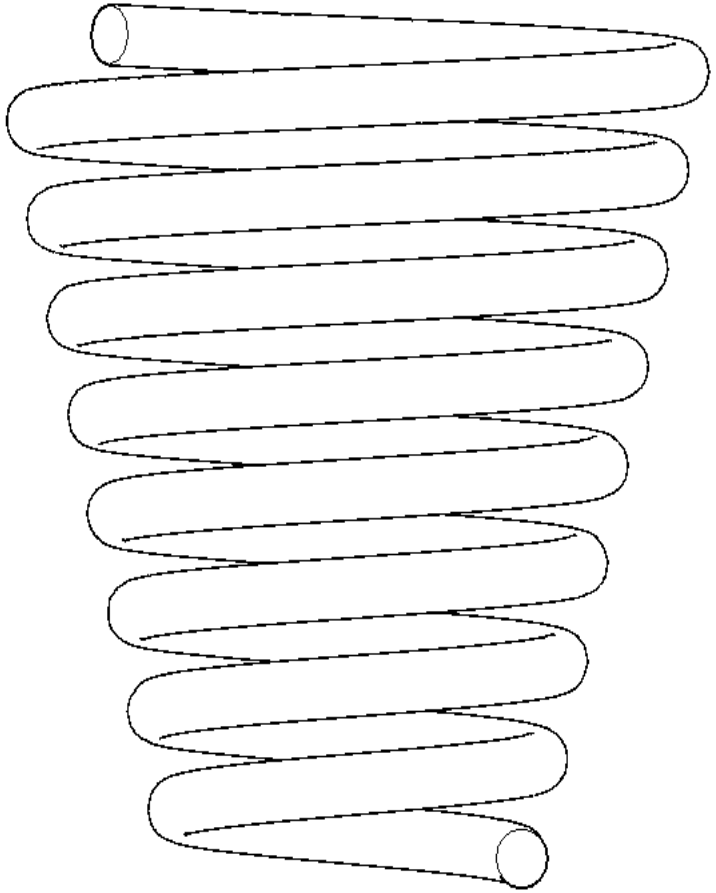
Q.No.6-Model using Drafting package



Helical sweep command

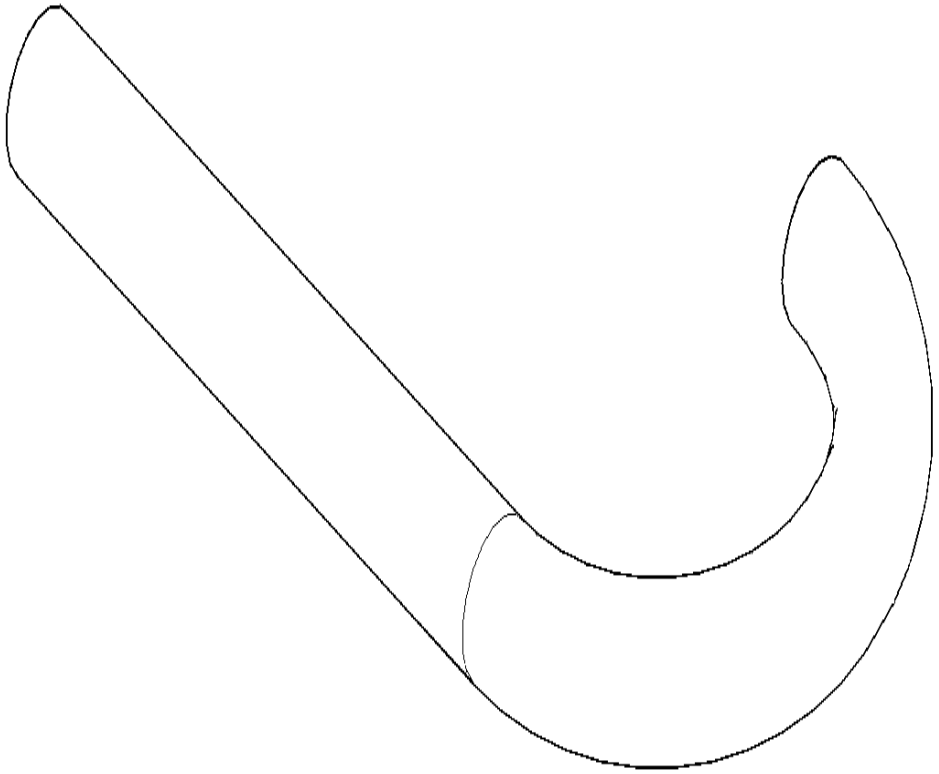
Q.No.7-Model using Drafting package



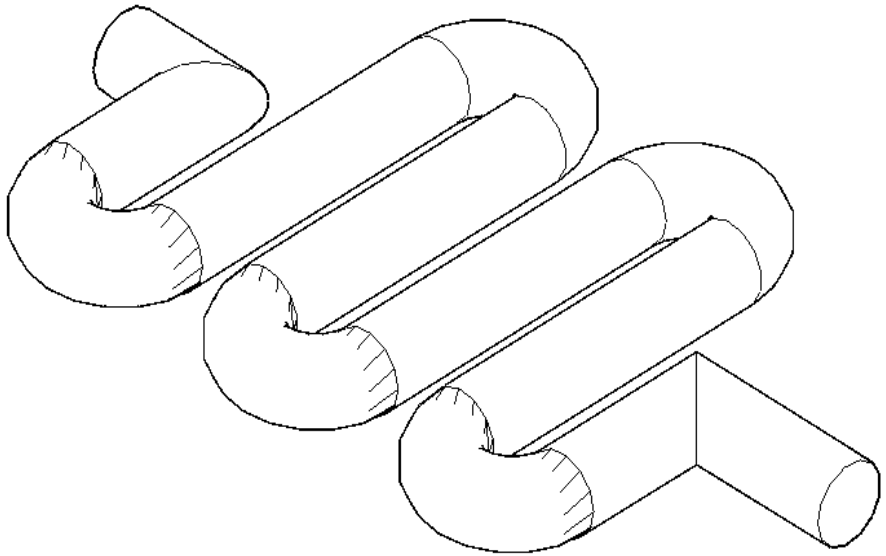


Helical sweep command

Q.No.8-Model using Drafting package



Sweep command



Q.No.9-Model using Drafting package

Loft command