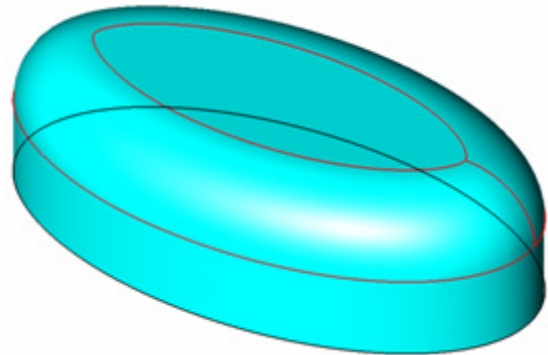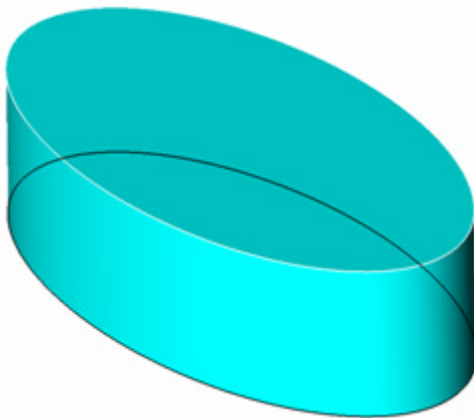# Methods of Creating Domed Shapes
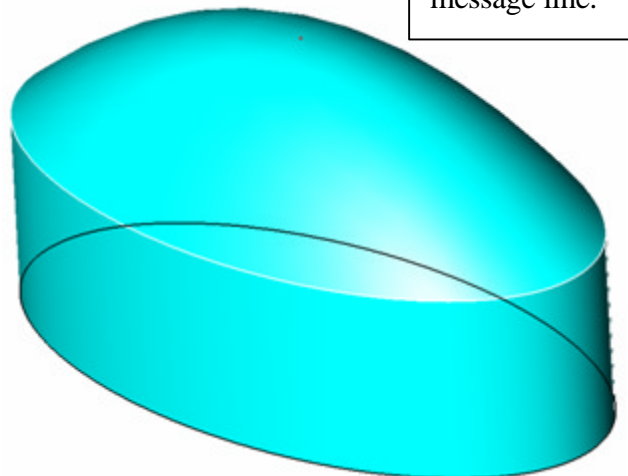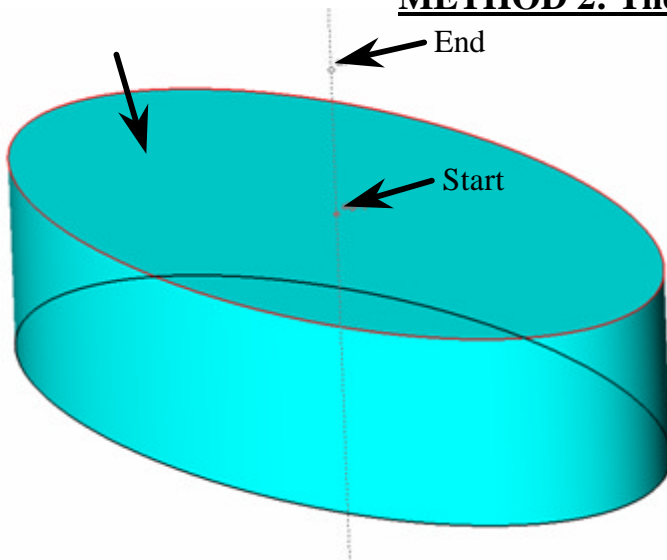
METHOD 1: The Simple Blend

Use the Blend tool to round off the edge of an extruded shape. This is easy, but it the shape is limited by the capabilities of the Blend tool.
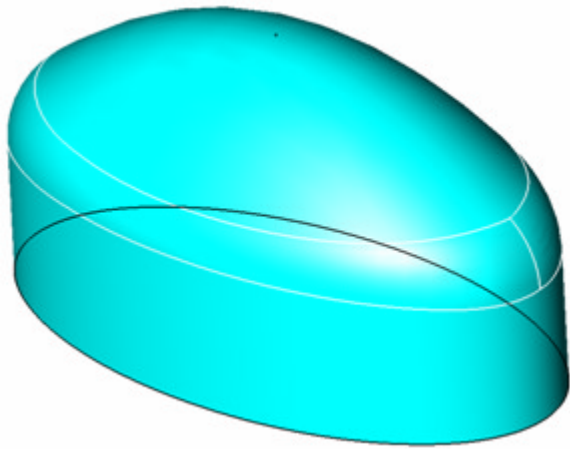
METHOD 2: The Deform Face Tool
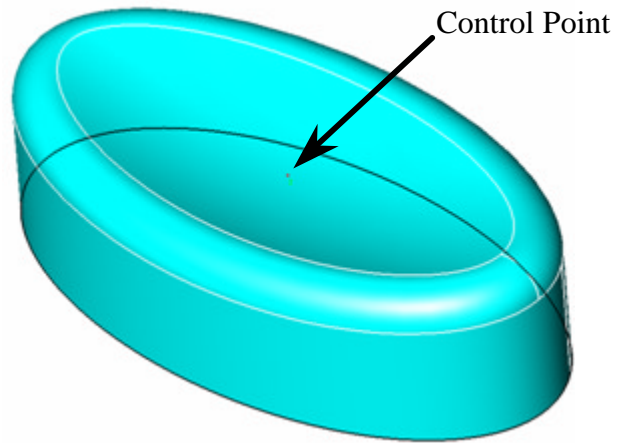
End

Start

Use the second option in the message line.

First select the face to dome and then define the direction/height for the dome.

The Face should look something like this.

Control Point

Add a blend to the edge

You can also create a concave dome shape by pulling the control point downward (align z).

The **Deform Face** tool is an easy way to make these sorts of shapes, however it works well on fairly simple shapes only. If your shape is more organic then use one of the following surfacing methods.
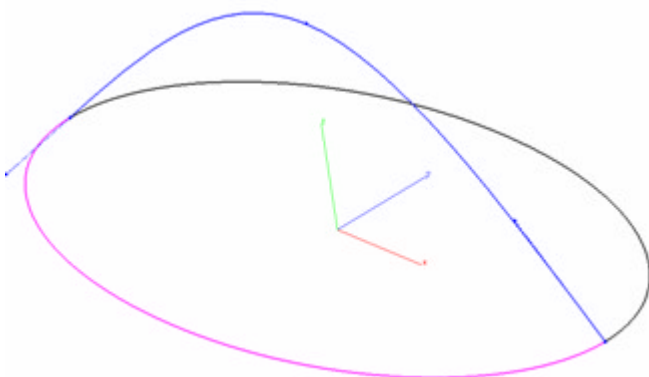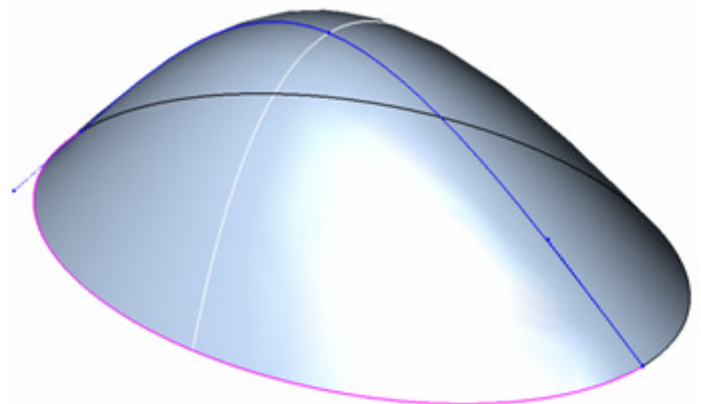
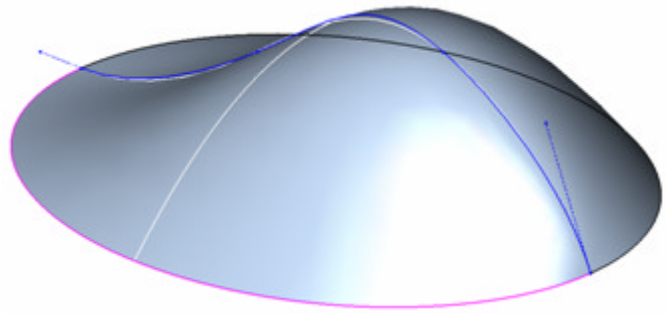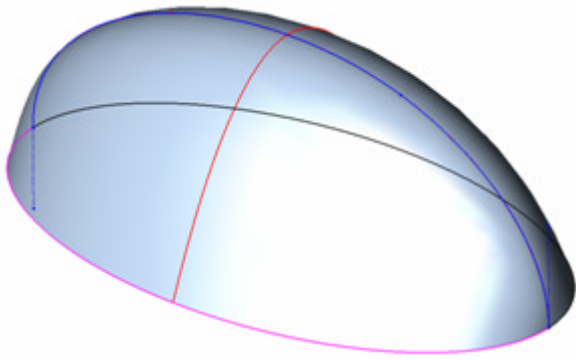## METHOD 3: The Skin Surface Tool
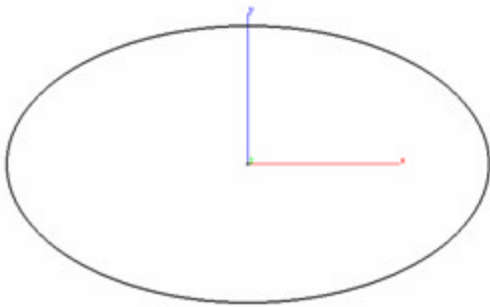
Start with an ellipse
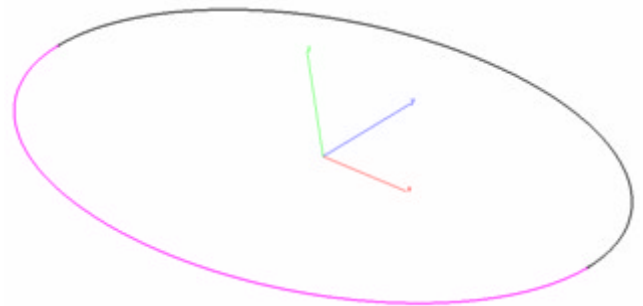
Use the **Divide Curve** tool to split the ellipse into two.

Draw a spline with 3 points that connects to the endpoints of the ellipse halves.

Use the Skin Surface tool and select all three curves by using the Shift key. A surface like this should be created.

By making your domed shape using a surface that is defined by a spline, you have the ability to adjust the control vertices thereby changing the shape of the surface.

METHOD 4: The Net Surface Tool
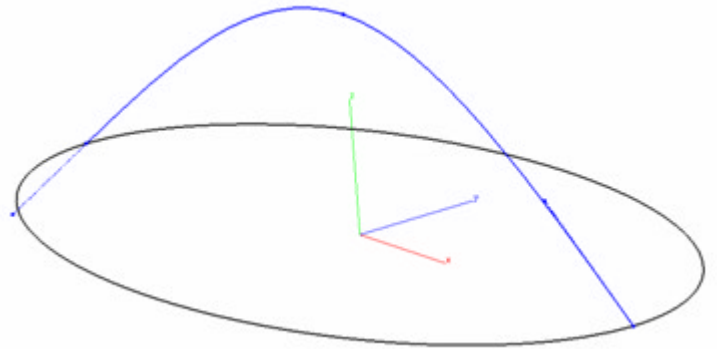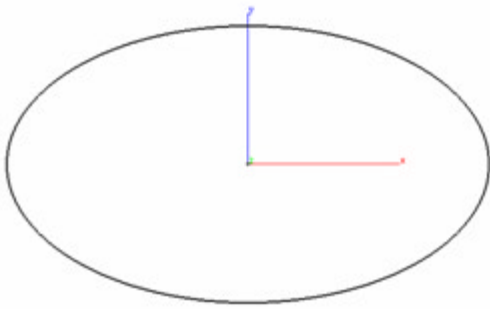
Start the shape the same way you did the skin surface, split the ellipse and draw a spline over the top.
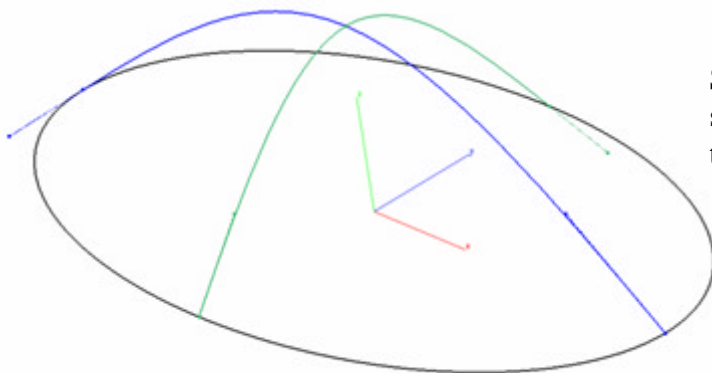
Draw a second spline over the top, perpendicular to your first spline.

Place a point here.

Place a point here.

Now insert a **Point** object at the intersection of the split ellipses and the main spline.

Now select the **Net Surface** tool and create the surface.

Curve 3

Curve 2

Curve 1

Point

Pick Object
POINT_75
ELLIPSE_73
ELLIPSE_71
B-SPLINE_68
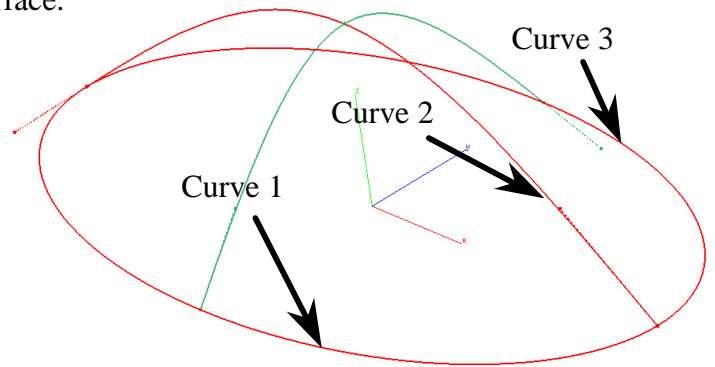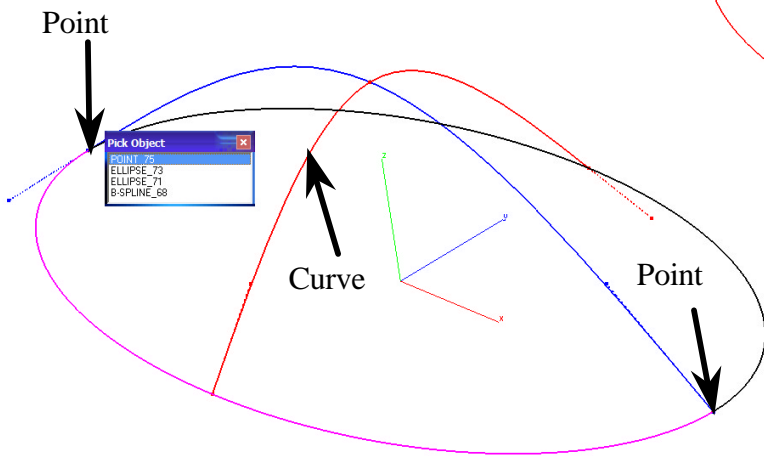
Curve

Point

Hold the Shift key and select the three curves going the direction shown above. Release the Shift key.
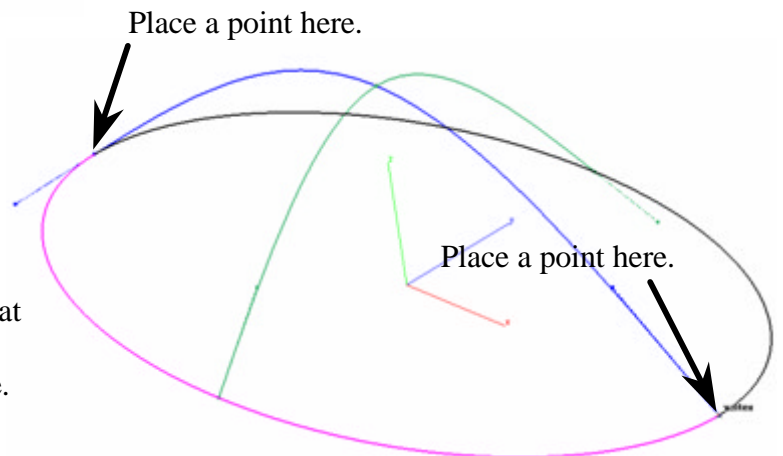
Hold the Shift key down again, and select the two points and the short spline. Release the Shift key.
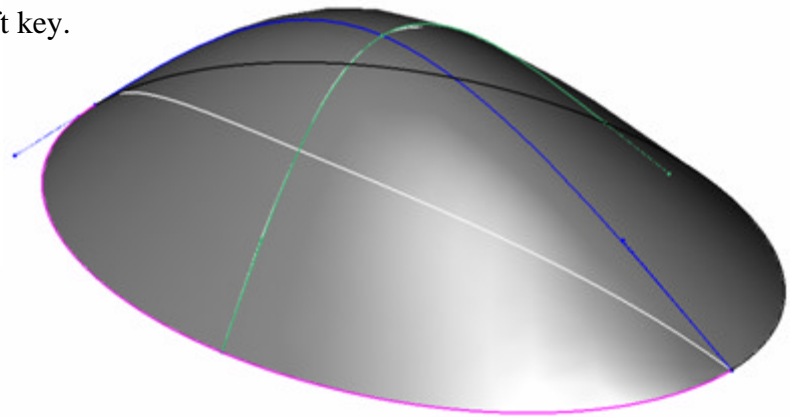
A Net surface should be created.
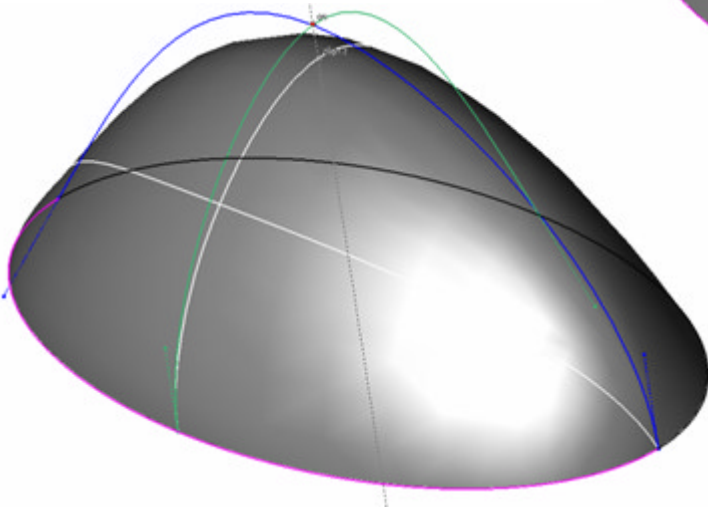
Because the net surface is defined by several splines, it offers more control over the shape of the surface

METHOD 5: A Different Technique with the Skin Surface Tool

Point Object

Create an ellipse and a point object that is above the ellipse some distance.

Create a **Skin Surface** between the ellipse and the point.

Edit Object
1 Skin Surface Object Selected

Geometry | Display | Attributes

☐ Close Last Section with First
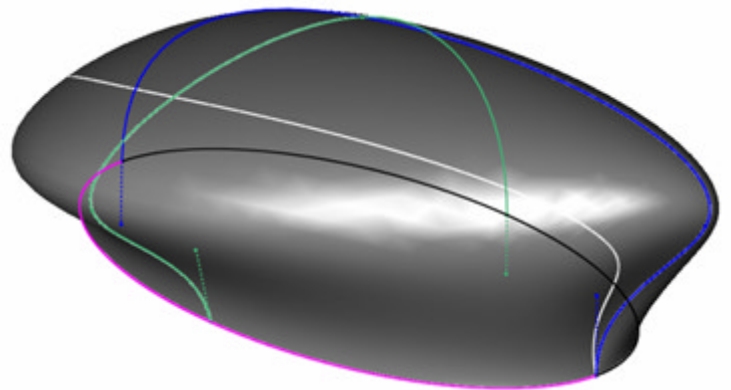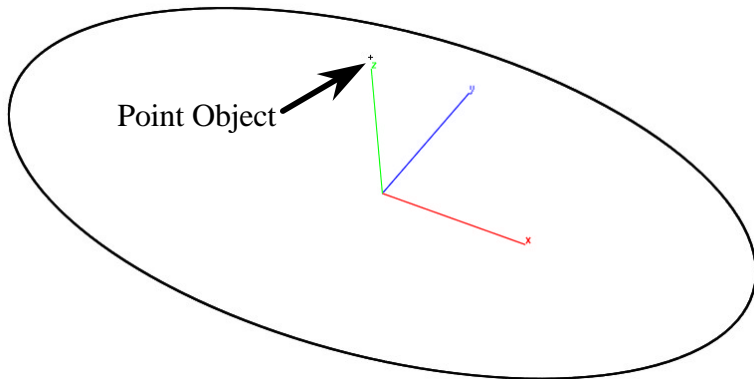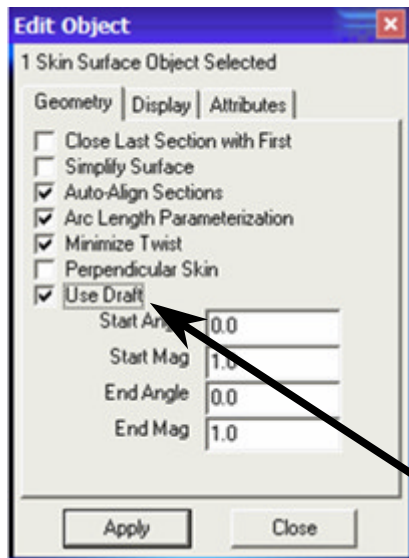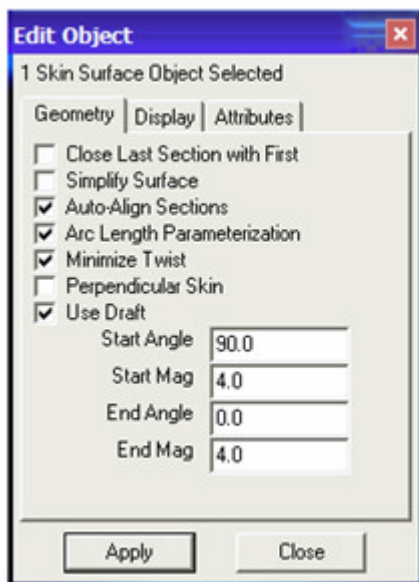☐ Simplify Surface
☑ Auto-Align Sections
☑ Arc Length Parameterization
☑ Minimize Twist
☐ Perpendicular Skin
☑ Use Draft

Start An	0.0
Start Mag	1.0
End Angle	0.0
End Mag	1.0

Apply   Close

Select the skin surface and open the Edit Objects box. The options in the Geometry tab contain a check box that says, Use Draft. Click this box.

Edit Object
1 Skin Surface Object Selected

Geometry | Display | Attributes

☐ Close Last Section with First
☐ Simplify Surface
☑ Auto-Align Sections
☑ Arc Length Parameterization
☑ Minimize Twist
☐ Perpendicular Skin
☑ Use Draft

Start Angle	90.0
Start Mag	4.0
End Angle	0.0
End Mag	4.0

Apply   Close
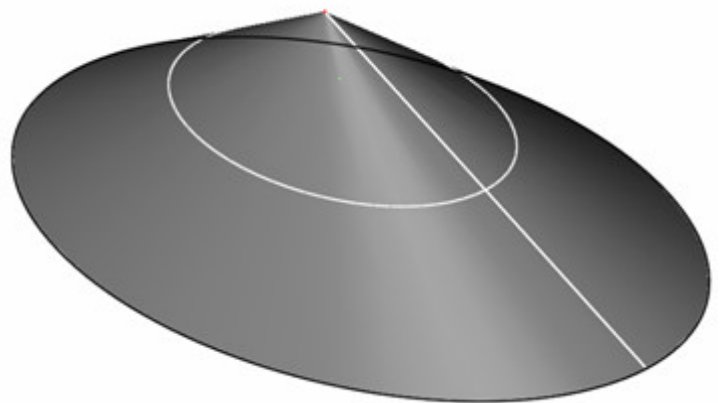
Adjust the values as shown above.

Achieve a nice dome shape by adjusting the draft values.
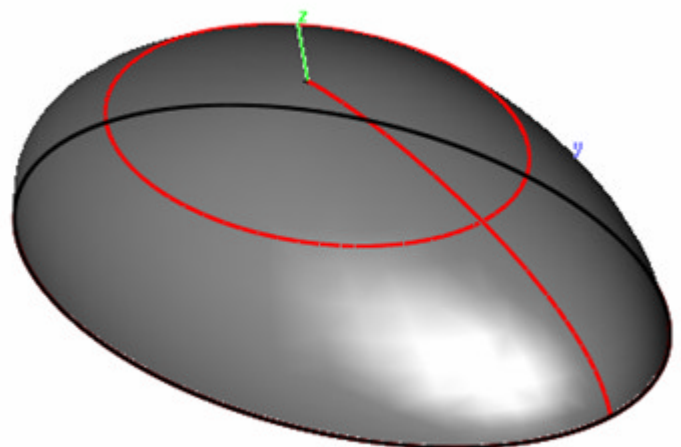
A Note of Caution

We need to make a note of caution comment on creation methods four and five. Both of these methods may introduce errors in your part that will not be apparent until the manufacturing process.

This problem occurs because of an issue known as degenerate points. To find the degenerate points in your part, select the part, and in the Edit Objects Dialog box, under the Display tab put a value of 5 in the **U** and **V Iso** lines boxes. You will notice in one of the iso lines that they gather together to one point; this is called a degenerative point. There are times when you will end up with twisted, useless geometry around this area, causing blends and shelling to fail. If you plan to send your part to a CNC machine, it must not have degenerative points. The cutting head will stop at this point with no way of knowing which direction to go next.