



Modeling Odd Shapes A Spray Bottle Top



Intermediate Skill Level



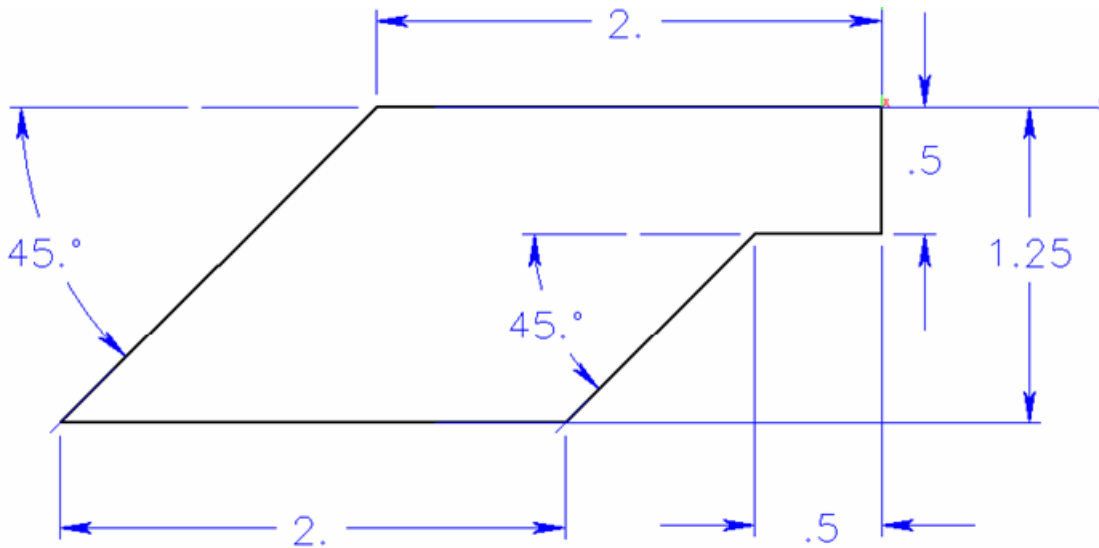
Using Cobalt[™], Xenon[™], Argon[™]

A Spray Bottle Top

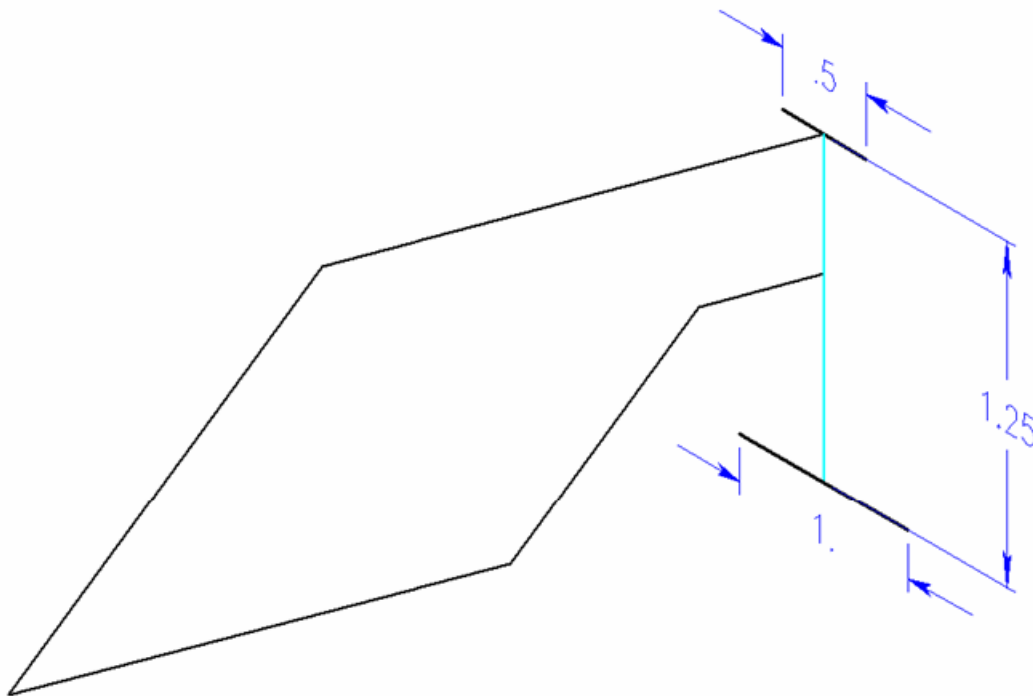




In this tutorial we will model a spray bottle top. This is a deceptively simple looking shape, but it can actually be a little difficult. This tutorial will show an easy way to create this shape.

1. First draw the side view shape as shown below starting from the origin. Switch to the side view before starting to draw.

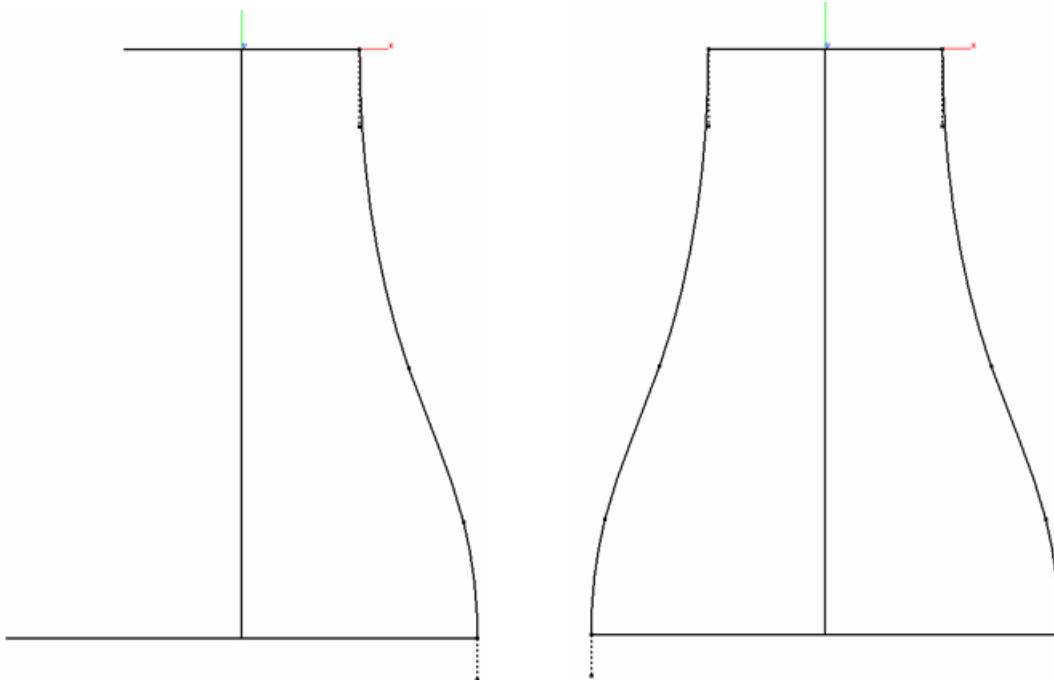


2. Now switch to a trimetric view and begin drawing the *front* profile as shown below. The light blue line is drawn for reference to help center the top and bottom lines.

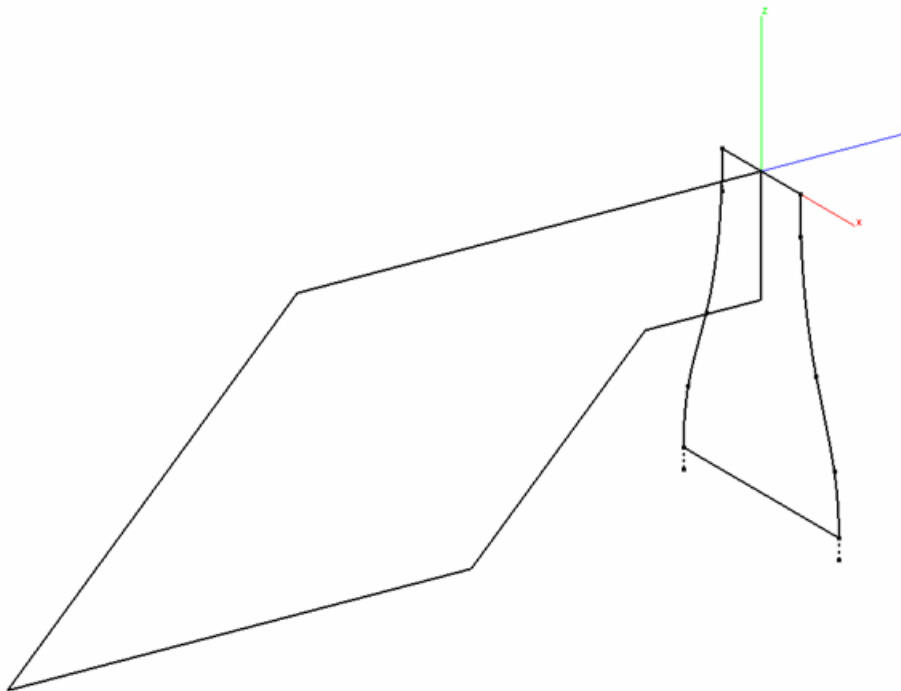



3. In the front view, use the **Spline**  tool to sketch the curvy shape of the sides. Draw one side and then mirror  it to the other side. Use the **ZY**

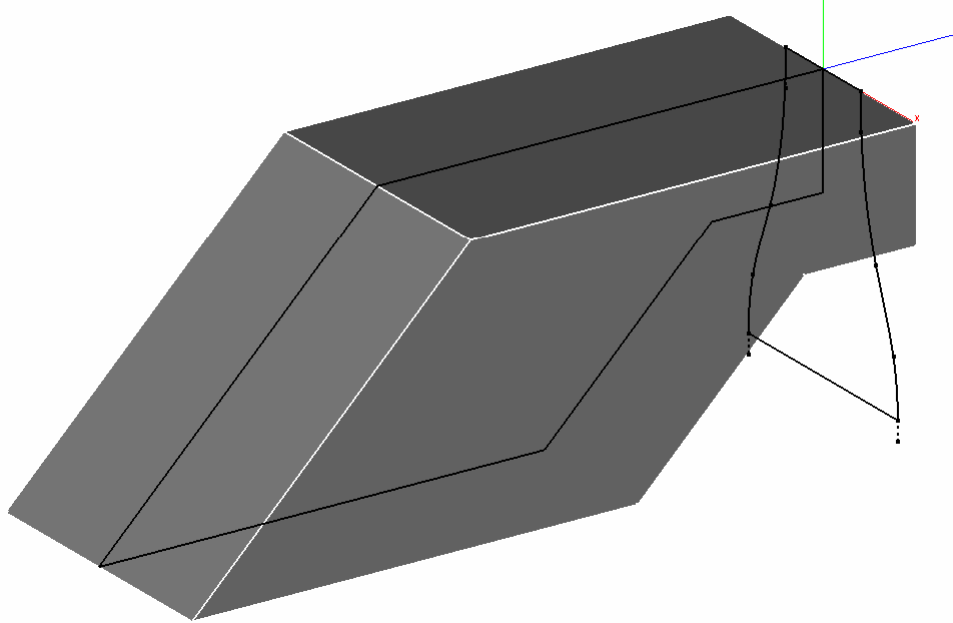
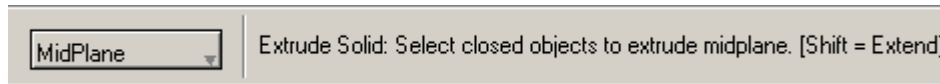
Plane option   and click in the origin for the reference point.



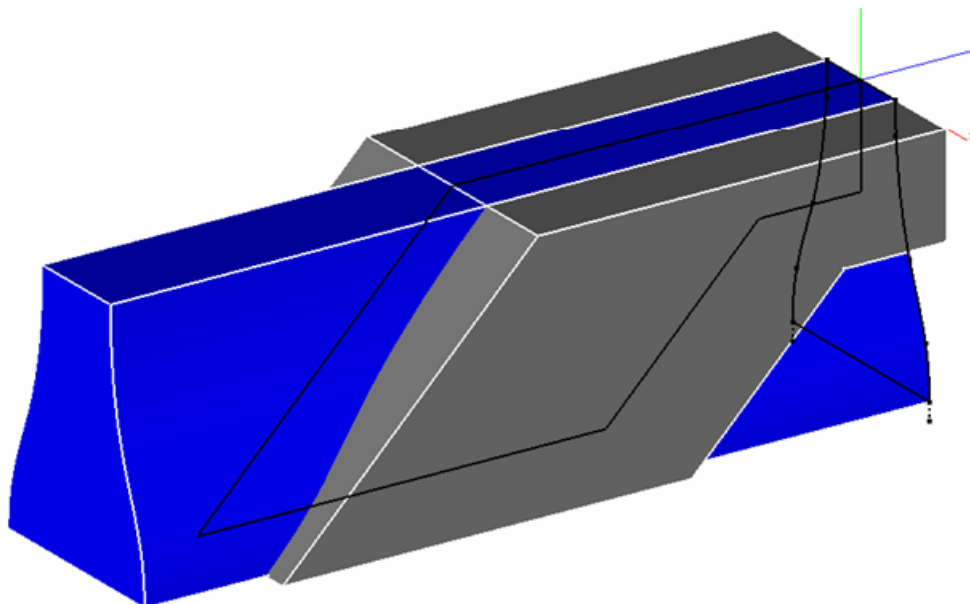
4. Switch back to a trimetric view. The two profiles should look like this.




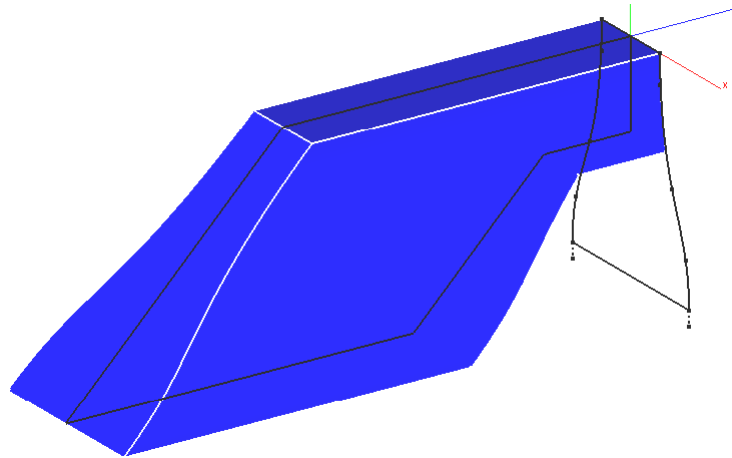
5. Now select the **Extrude**  tool and select the **MidPlane** option in the Message Line. Extrude the *side* profile to a distance of about **1.25"**.



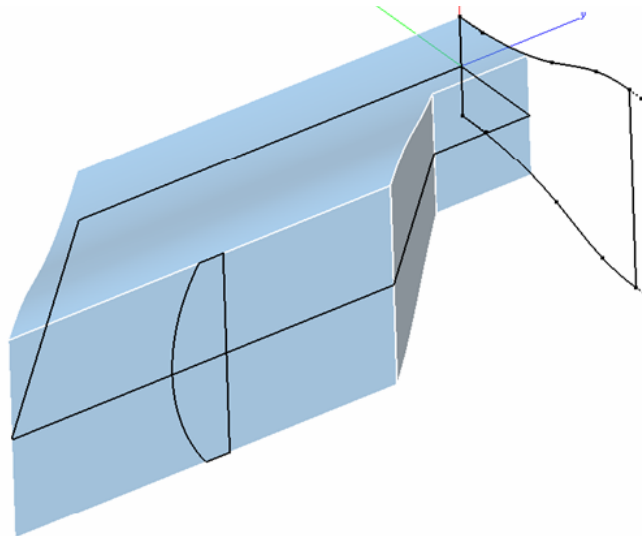
6. Next, extrude the *front* profile normally so that it extends beyond the first extrude as shown below.




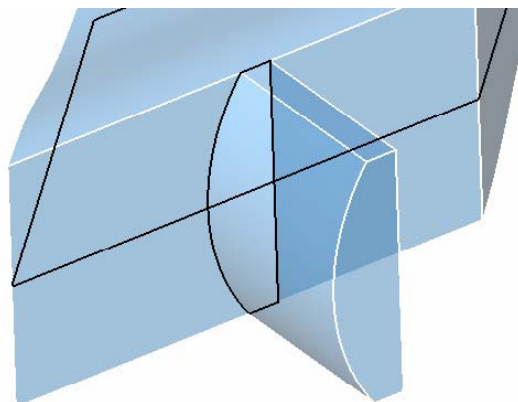
7. Now select the **Intersect Solid**  tool and select the two extruded shapes. The leftover shape should look like this.




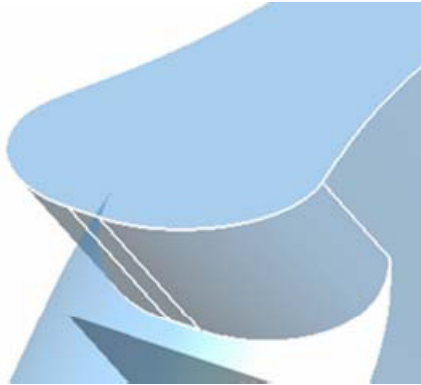
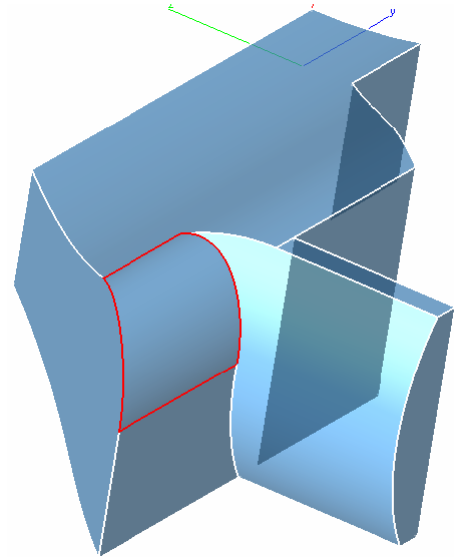
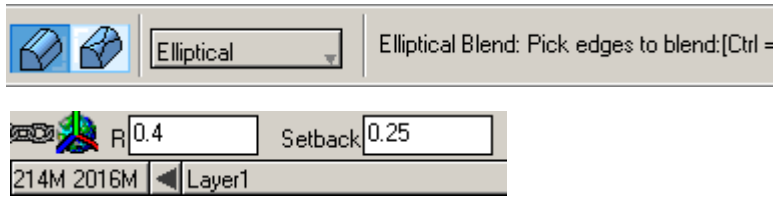
8. Now let's create the lower protrusion. Draw a sketch on the bottom face of the shape that resembles the one shown here. This sketch is approximately centered on the bottom face.



9. Use the **Protruded Feature**  tool to add that profile to the main shape.

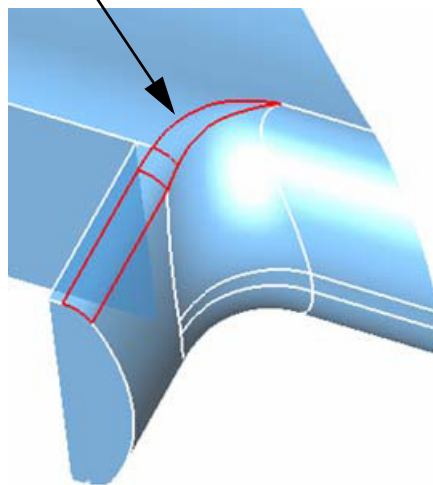
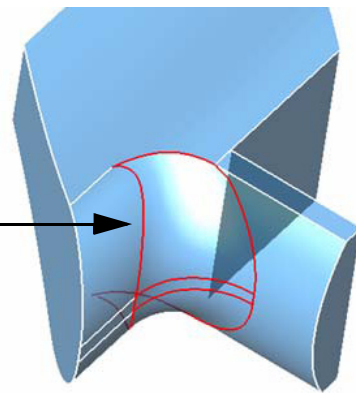


10. Add some blends  using the Elliptical blend. Set the two radius values as shown below, then click on the two rear side edges.

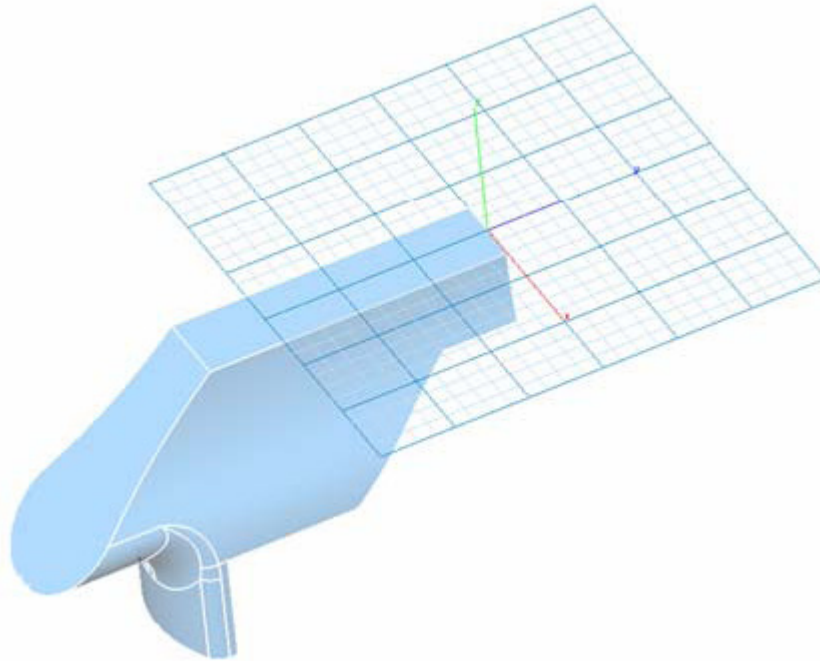


11. Switch back to the regular constant blend and add a **.35"** blend here.

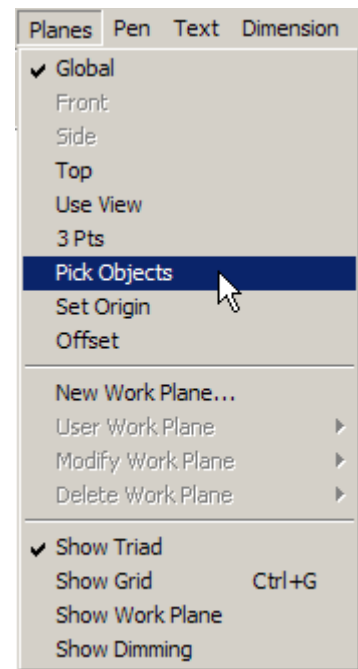
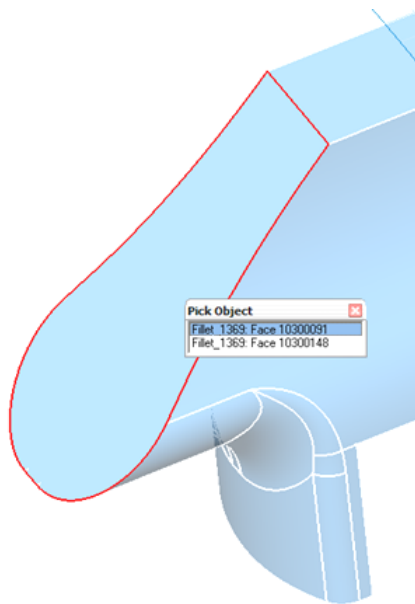
12. Finally, add a **.125"** blend on the side edges.



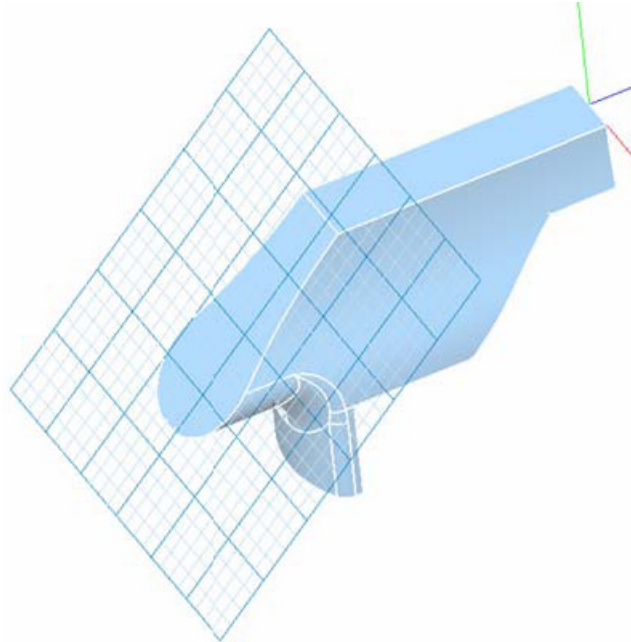
13. Next, give a little more shape to the back angled face by deforming it to a curve. To do this, first draw a curve on the back face to deform it to.
 - To make this easier, orient the work plane on the back face to draw directly on it. It is often helpful to show the grid (found under the Planes menu) to see where the work plane is.



14. When the work plane is displayed, select the **Planes>Pick Objects** option and then select the back face of the spray bottle top.

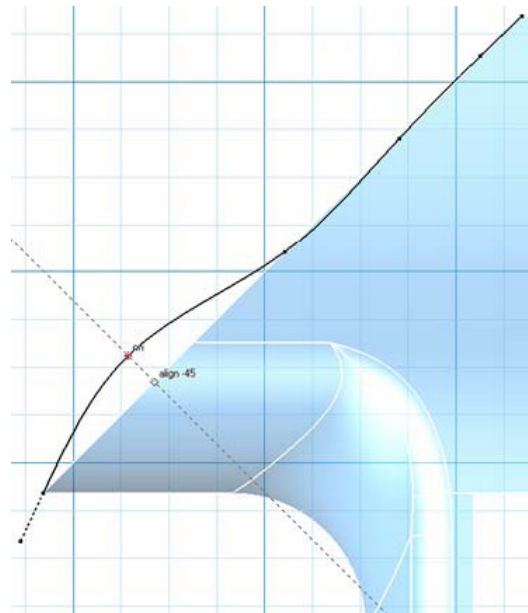
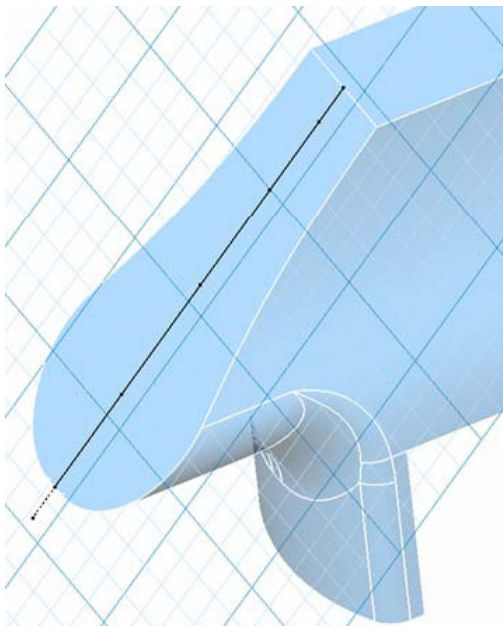


15. The work plane should be re-oriented to match the back face.

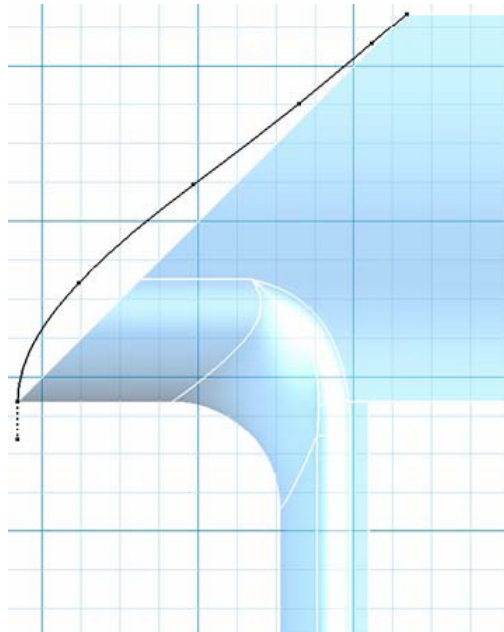



16. Now begin drawing a spline down the middle of the back face. It is often easier to draw it straight first and then move the control points afterwards.

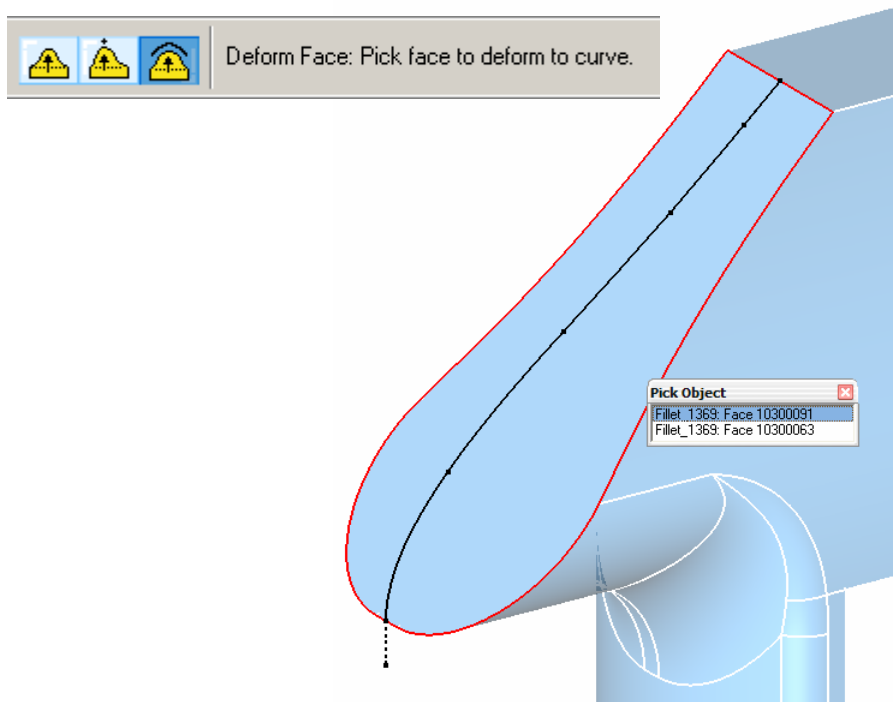
- To be able to move the points in the necessary direction, relocate the working plane to the side by choosing the **Planes>Pick Objects** and clicking the side profile of the bottle top.



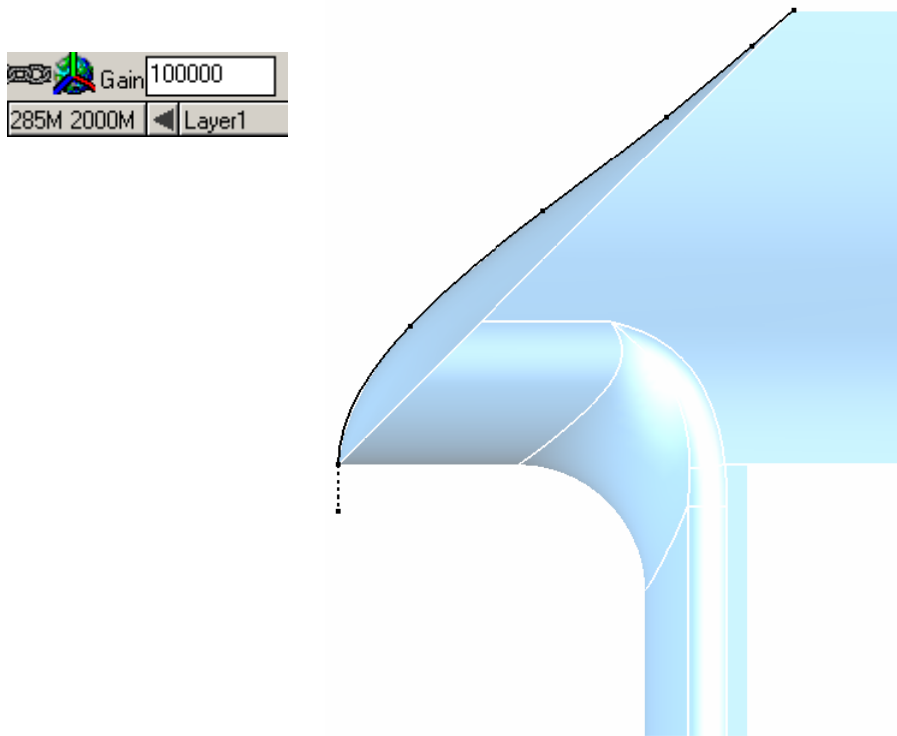
17. After moving the points around, the shape should look something like this.




18. Now select the **Deform Face**  tool and then select the **Deform to a Curve** option in the Message Line. Select the face to deform, and then select the curve to deform to.

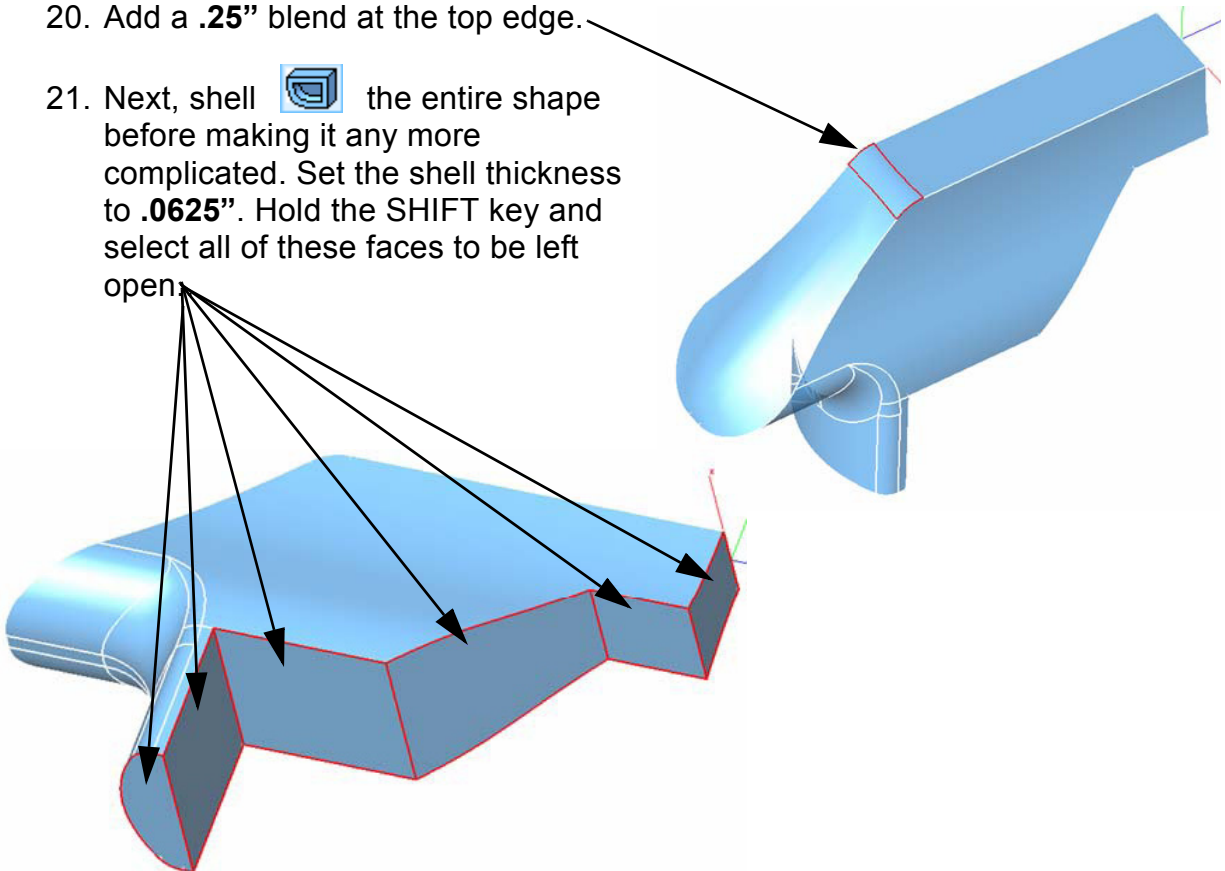


19. Set the Gain value at the bottom to 100000 so that the deformation will hold very tightly to the curve.

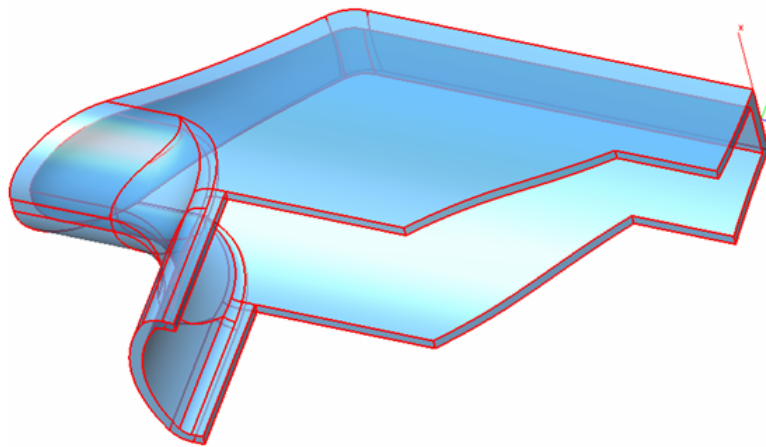


20. Add a **.25"** blend at the top edge.

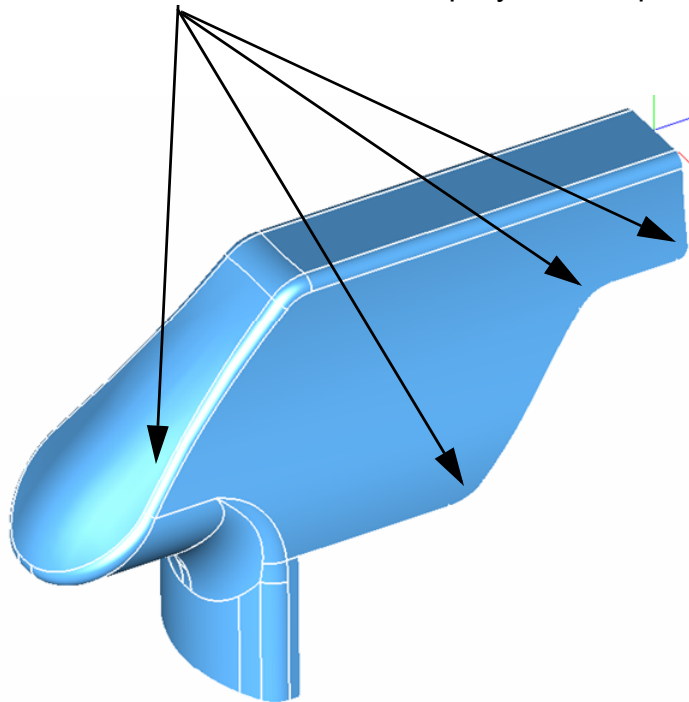
21. Next, shell  the entire shape before making it any more complicated. Set the shell thickness to **.0625"**. Hold the SHIFT key and select all of these faces to be left open:



22. The resulting shell should look like this.

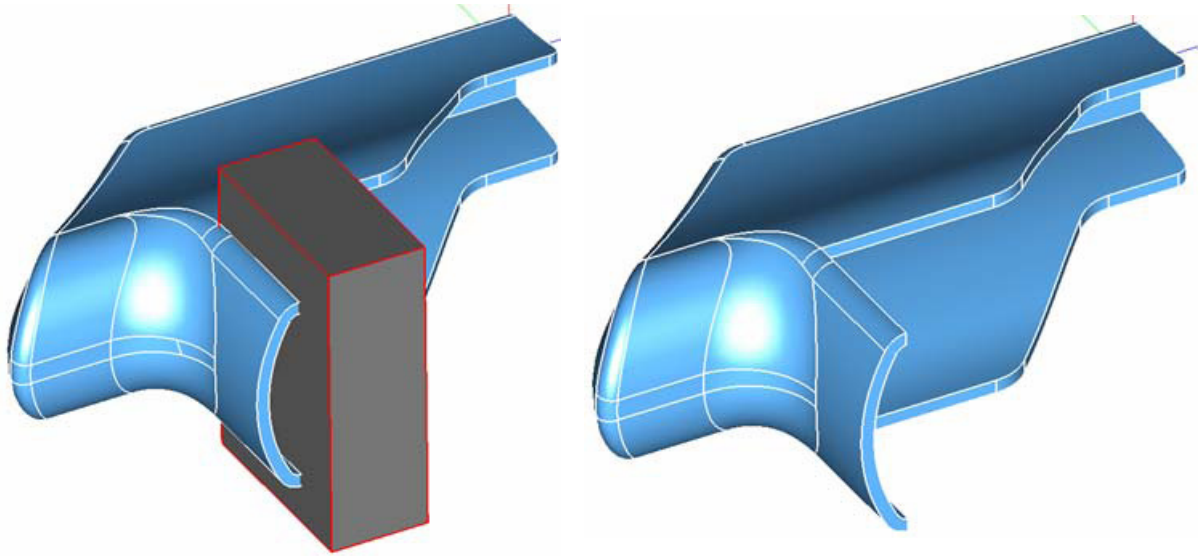


23. Add some additional **.05** blends and the spray bottle top is almost complete.

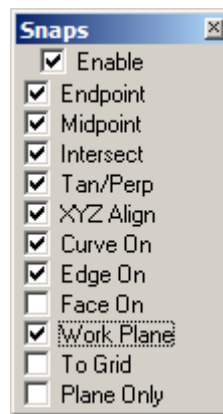
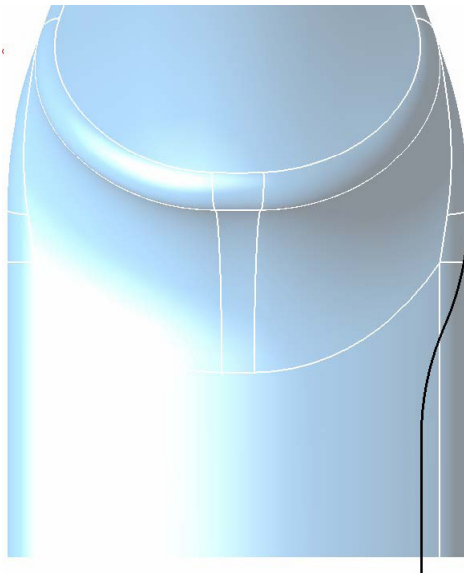



24. The last step is to trim up the lower protrusion to make it more like the actual bottle top.



25. First create a block primitive and position it as shown. Then subtract the block.

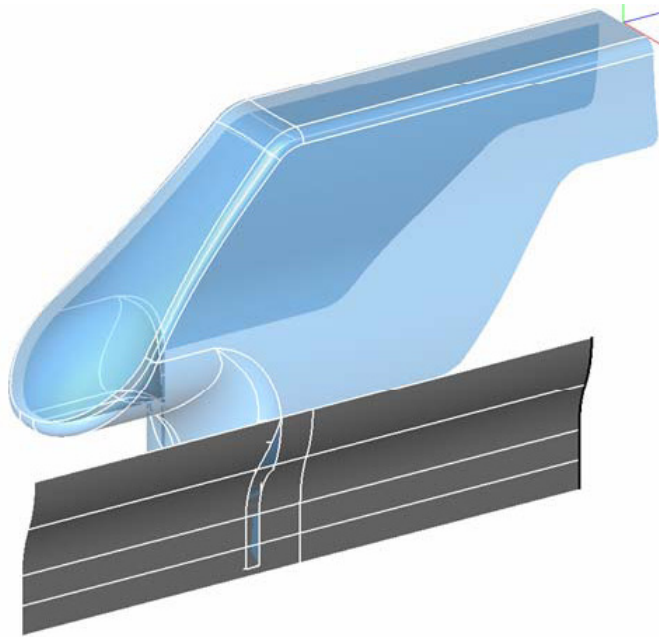


26. Draw the curvy shape of the protrusion. Use the Work Plane option on the Snaps palette (located in the Window menu). This will help to draw on the front work plane and not accidentally snap onto something else.

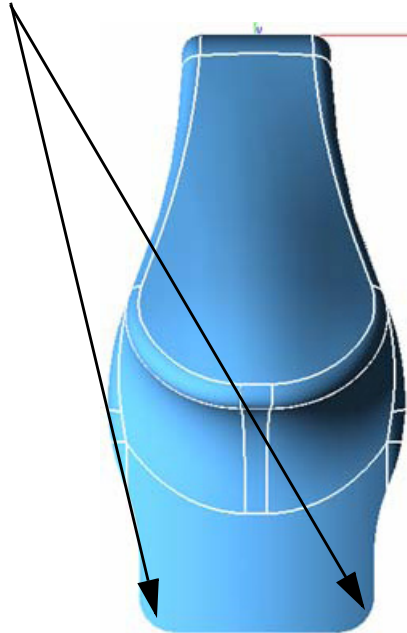


27. Use the surface **2-Point Sweep**  tool to extrude a surface from the sketch.

28. Mirror  that surface to the other side and use the surfaces to trim away the solid with the **Trim Solid**  tool.



29. Add finishing blends.



Your spray bottle top is now complete!



