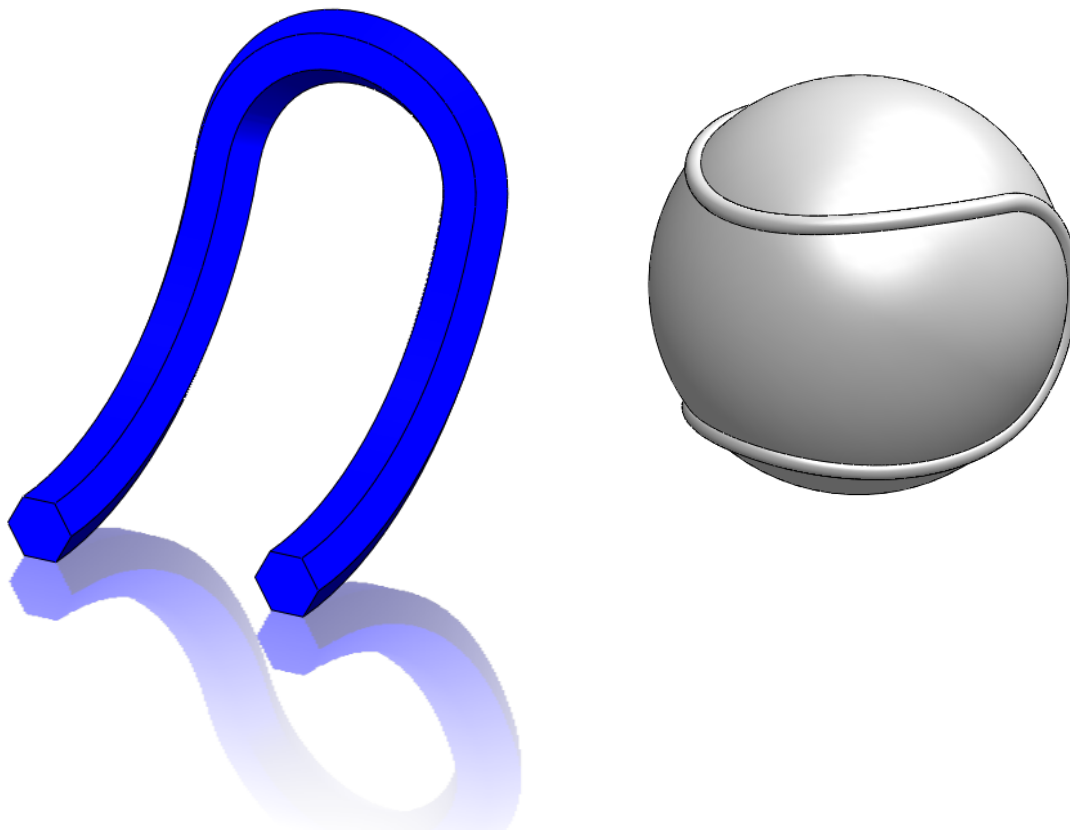


Projected Curve

Complement to
[Beginner's Guide to SolidWorks Books](#)



Disclaimer: These models and drawings are not meant for manufacturing but as a teaching aid to practice SolidWorks modeling.

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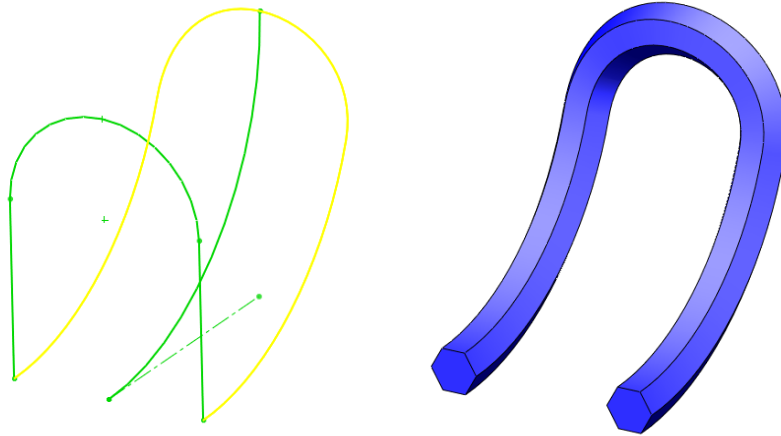
We'd love to hear your comments and suggestions, please send us an email at:

areyes@mechanicad.com

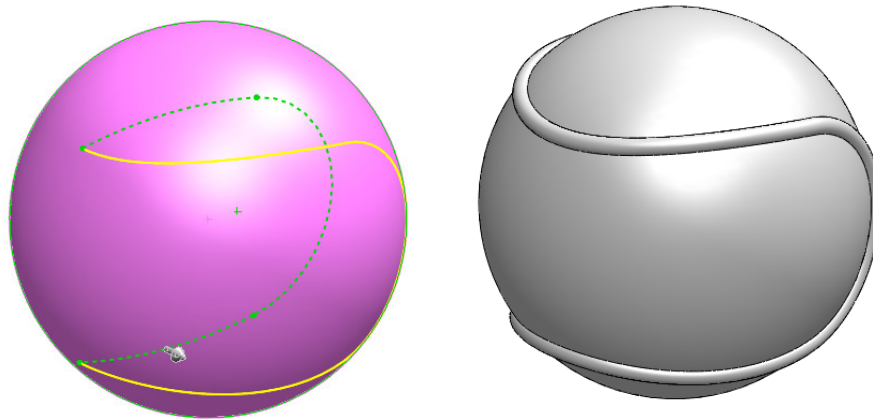
Projected Curve:

A projected curve is typically used either in sweeps and lofts as path or guide curve. There are two types of projected curves:

Sketch on Sketch: Use two sketches to make a single curve.



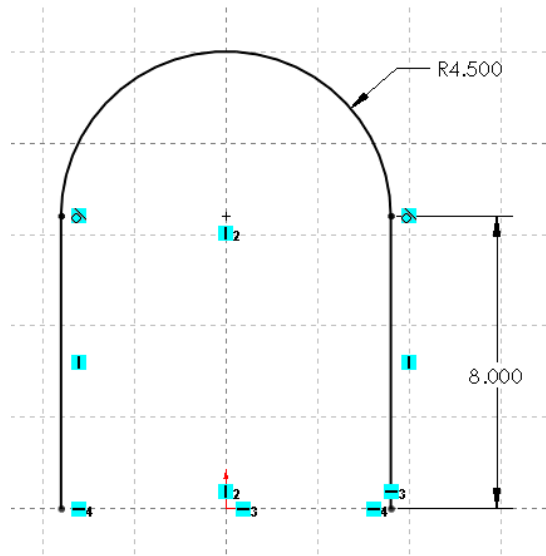
Sketch on surface: Use a sketch to project on a surface.



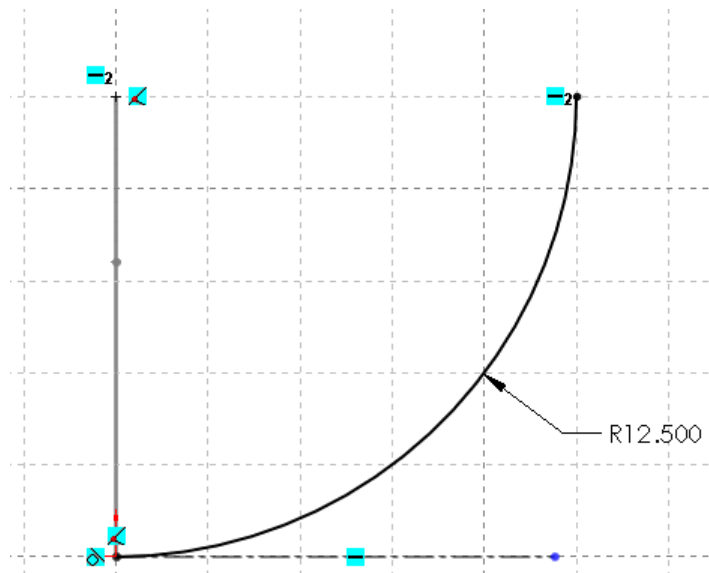
Sketch on Sketch

This approach works very well when we need to make a curve that we can project in two different planes. In this case the Front and Right plane.

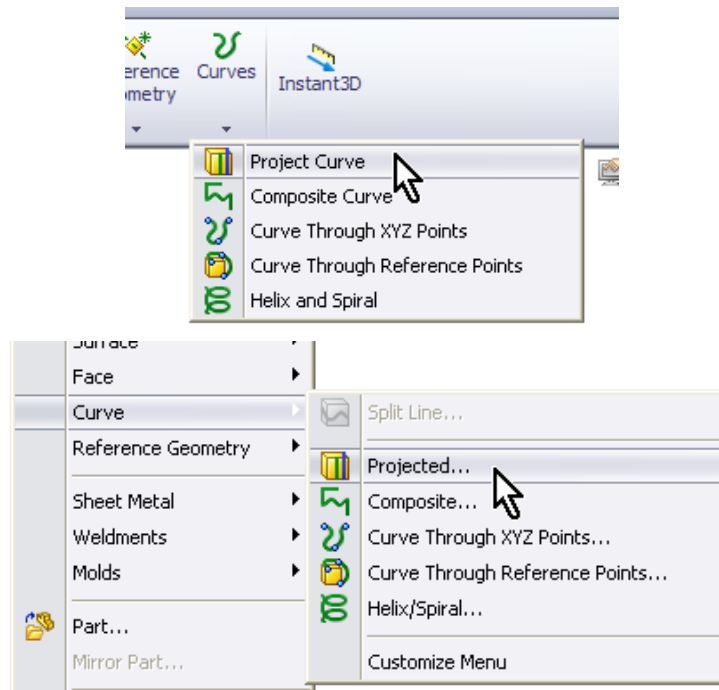
Make the first sketch in the Front plane as follows, use relations and dimensions as needed. This sketch has to be a projection of the desired curve in the Front plane. Exit the sketch when done.



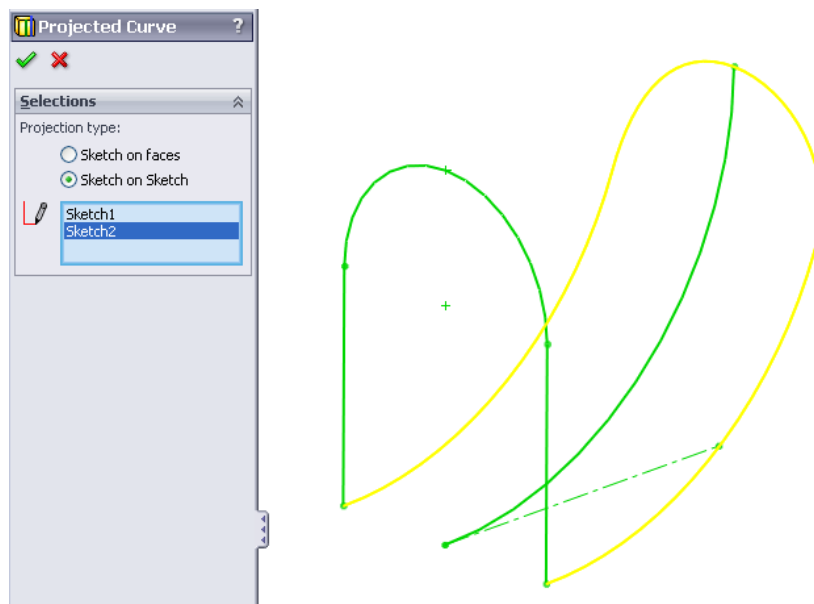
Make the second sketch on the Right plane. The second sketch must be a projection of the curve on the Right plane. The lower construction line was used to make the curve tangent to it. Exit the sketch when done.



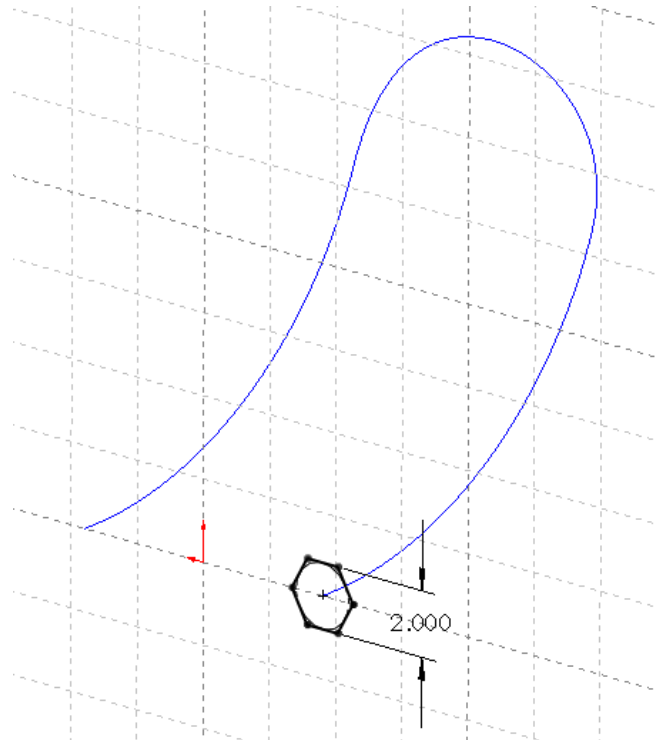
To make the projected curve, select “Projected Curve” from the “Curves” drop down menu in the Features tab in the Command Manager, or from the menu “Insert, Curve, Projected”.



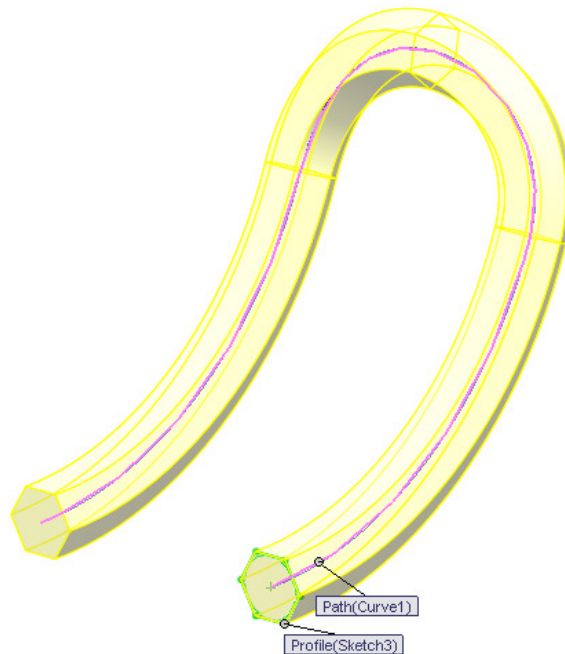
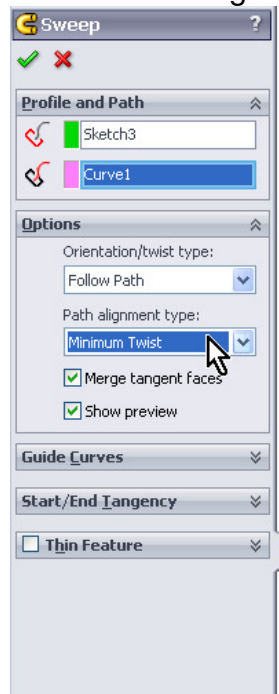
From the command's options select “Sketch on Sketch” and select both sketches either from the graphics area or the fly-out feature manager. You will see the first curve projected on the second. Click OK when done.



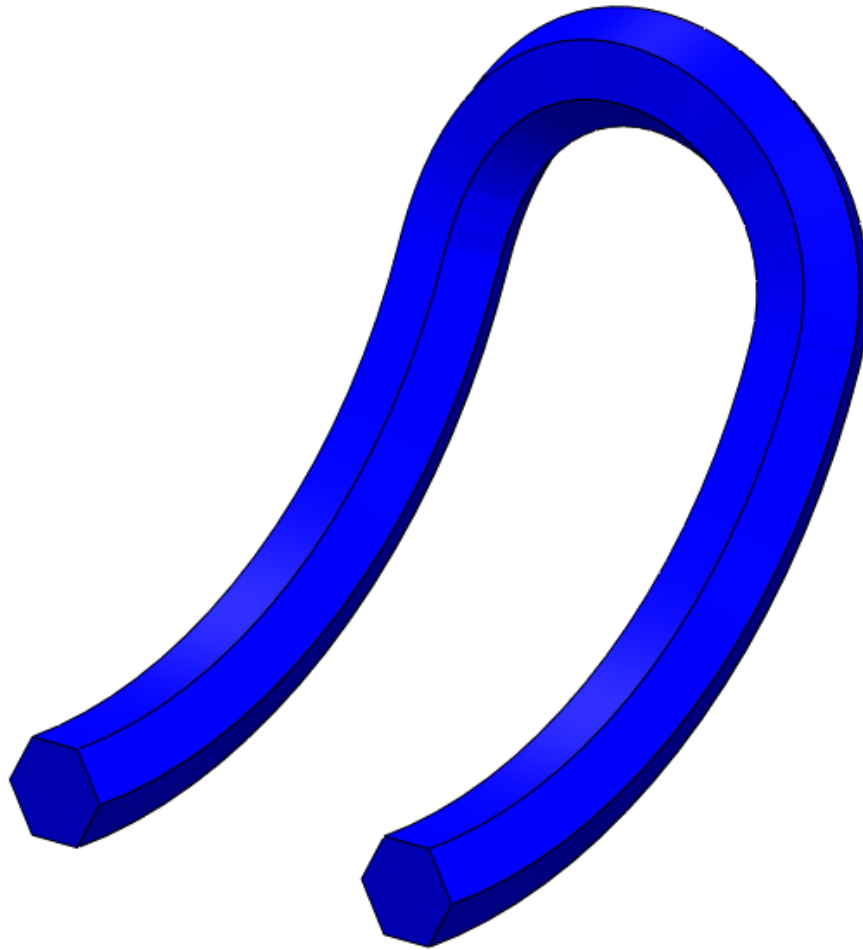
Once the curve is done, we can use it for a path. In this case we used a hexagonal profile as it illustrates the effect of the curve better than a round one. Add a sketch in the Front plane, add a hexagon and dimension as shown. Make one line of the hexagon horizontal, and dimension 2" high. Exit the sketch.



Make a Sweep using the hex sketch as a profile, and the composite curve as a path. Remember to change the "Path alignment type:" in the Options box to "Minimum Twist" and "Merge tangent faces".



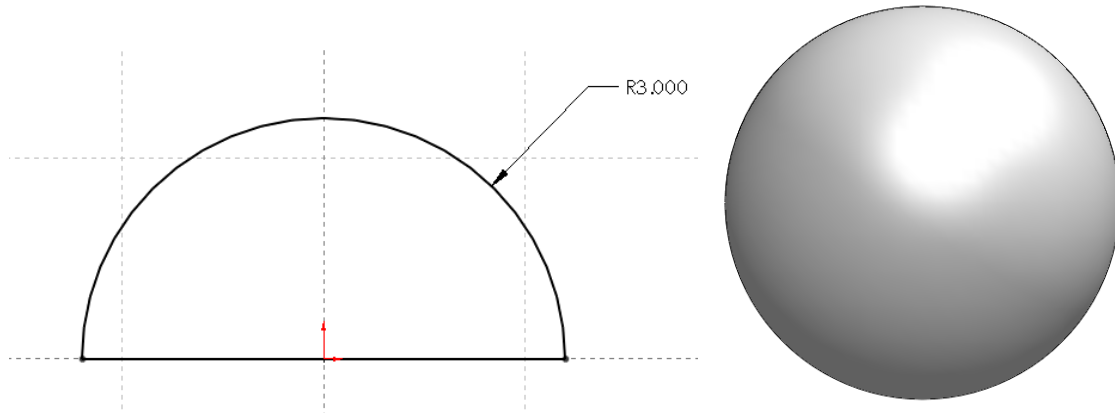
Finished sweep using Composite Curve (Sketch on Sketch)



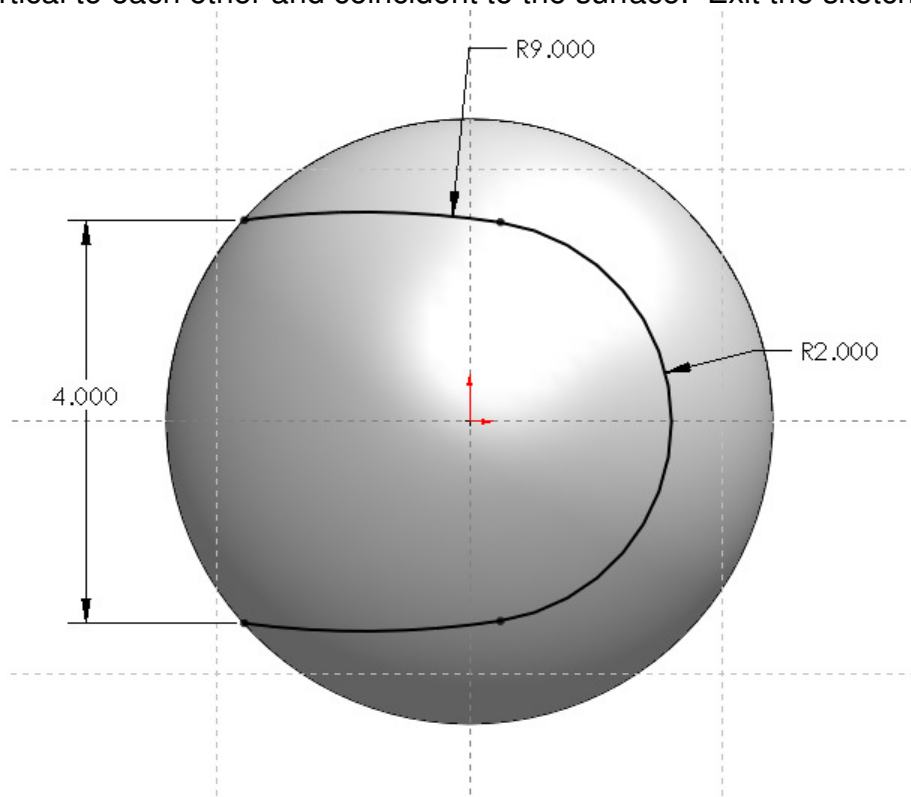
Sketch on Surface

The sketch on surface is useful especially when we have an irregular model face or surface where we want to have a particular feature, typically a sweep. In this example we'll make a sphere and add a curve to use it as a path for a feature similar to a baseball ball.

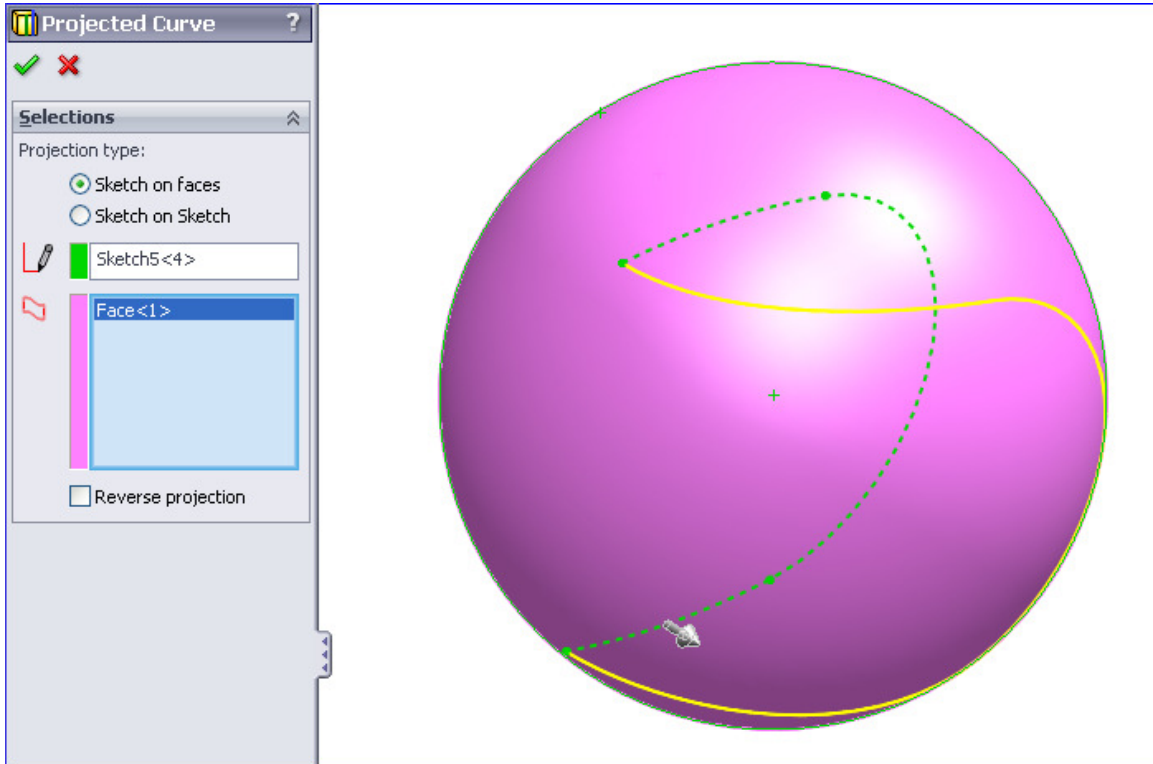
Make a sketch on the Front plane as shown, and make a revolved feature to create a sphere.



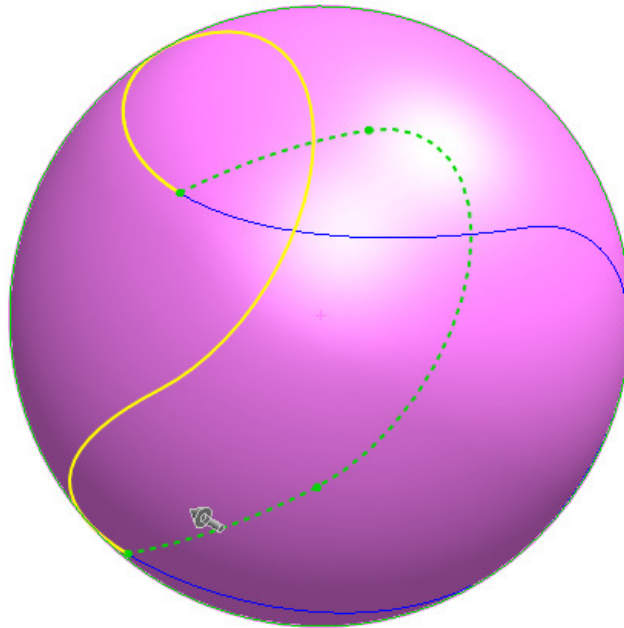
Make a new sketch on the Front plane as shown. The right side arc is concentric to the origin and all three arcs are tangent. Both left side endpoints are vertical to each other and coincident to the surface. Exit the sketch.



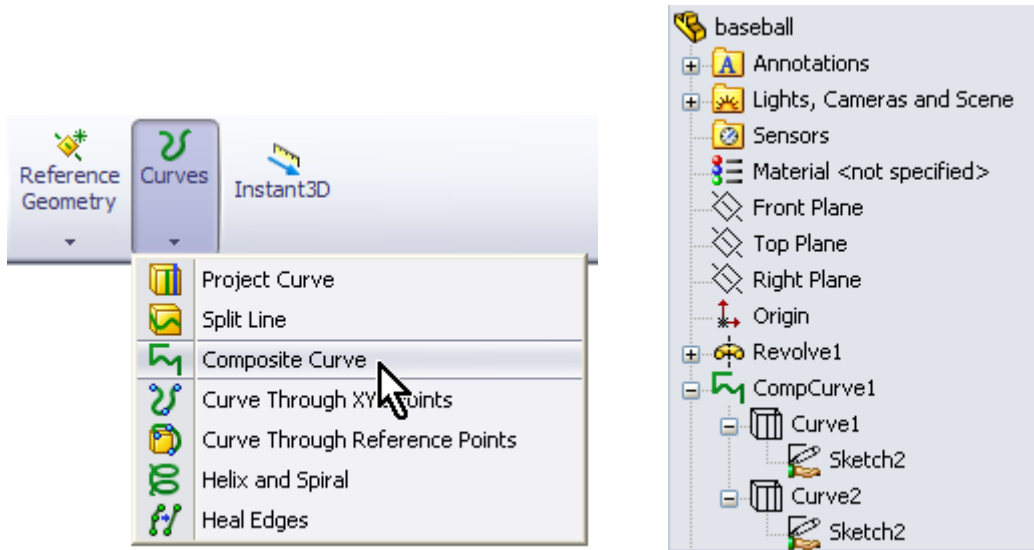
Select the “Projected Curve” command and use the option “Sketch on Faces”; select the sketch and the sphere’s surface.



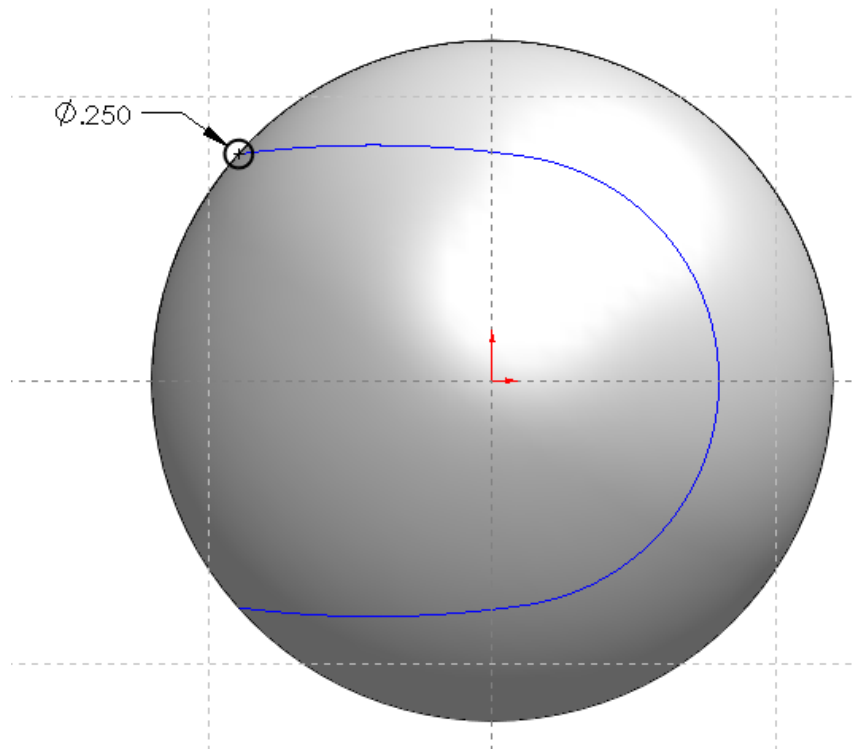
Notice the curve is projected only in one direction. In order to make a complete closed curve we'll make a second projected curve on the same surface in the other direction using the same sketch, and then we'll make a composite curve with both of these curves.



When we complete the second projected curve, we'll make a composite curve to make a single curve out of the previous two to make a single path for a sweep (in this case). Select the "Composite Curve" icon from the "Curves" drop down icon in the Features tab of the Command Manager or from the menu "Insert, Curve, Composite". Select both projected curves and finish with OK.



In the Front plane, add a sketch and make a circle. Add a "Pierce" relation between the circle's center and the composite curve. Exit sketch when done.



Make a Sweep feature using the previous sketch as a profile and the composite curve as a path. Activate the option “Merge tangent faces” to have a smooth continuous surface.

