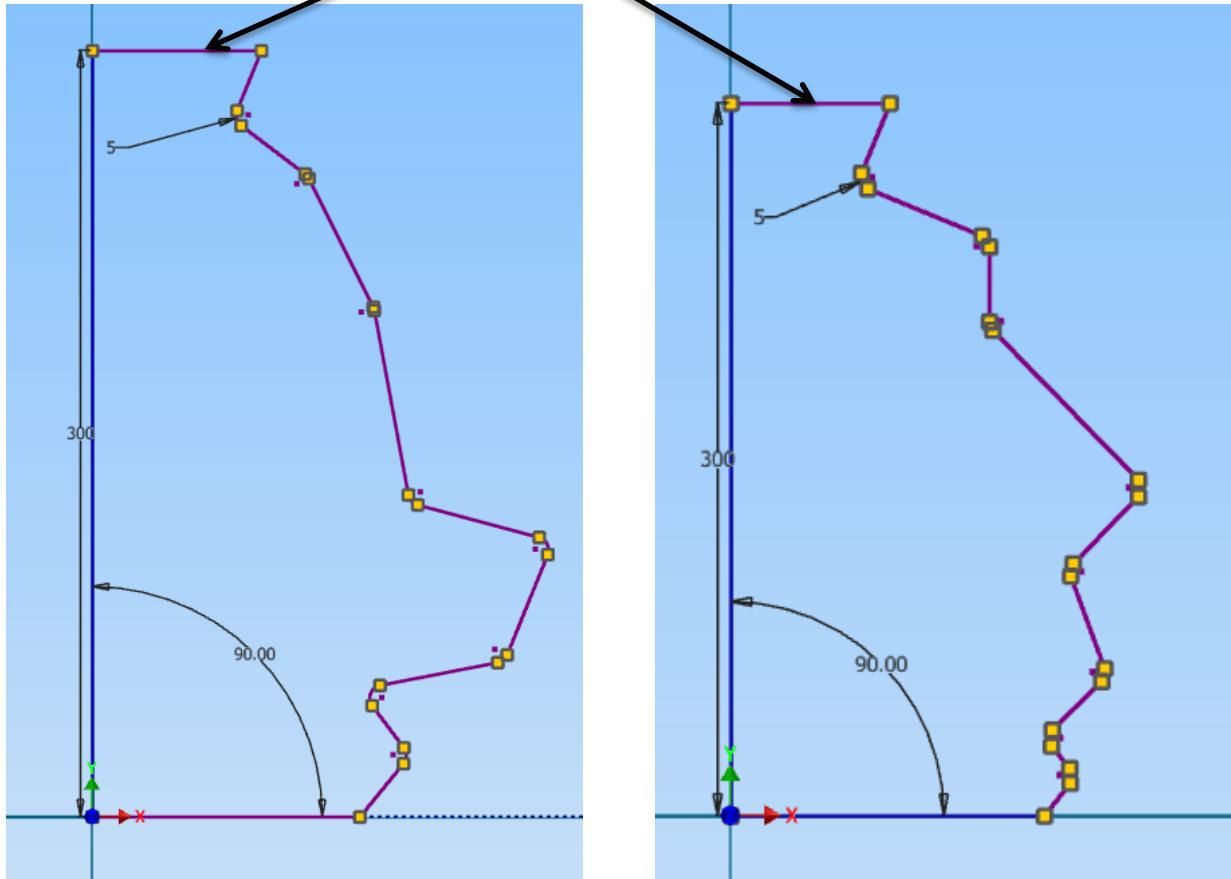


# Bronze Age Section Mold Project

## Part I – Create the *Vessel*

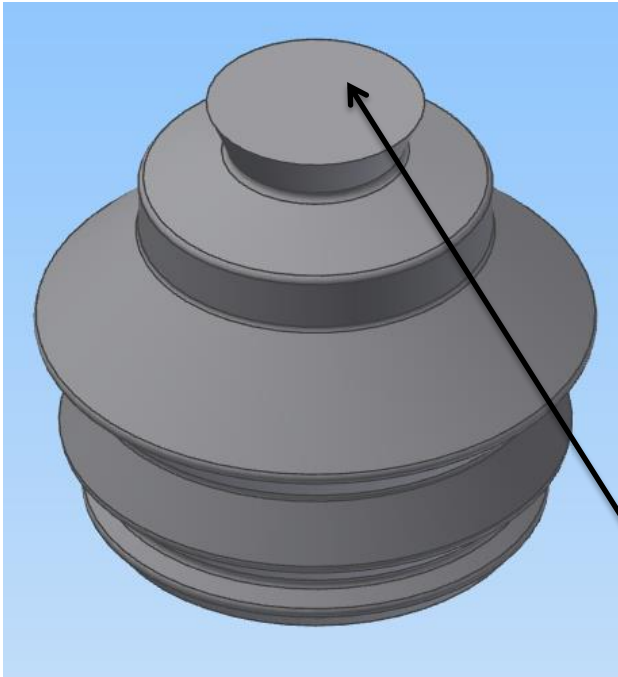
1. Start a **New Project** > **Bronze Vessel**. Set the document units to centimeters.
2. Create a **New Part** > **Save As...** *vessel\_INL\_CAD\_3*.
3. Create a **New Sketch** on the **XY** plane and sketch a profile for your vessel.
4. Your sketch *needs to be* 300 mm (30 cm) high, but you should use a profile of YOUR OWN.
5. Be sure your sketch profile is **FLAT ON TOP!!**



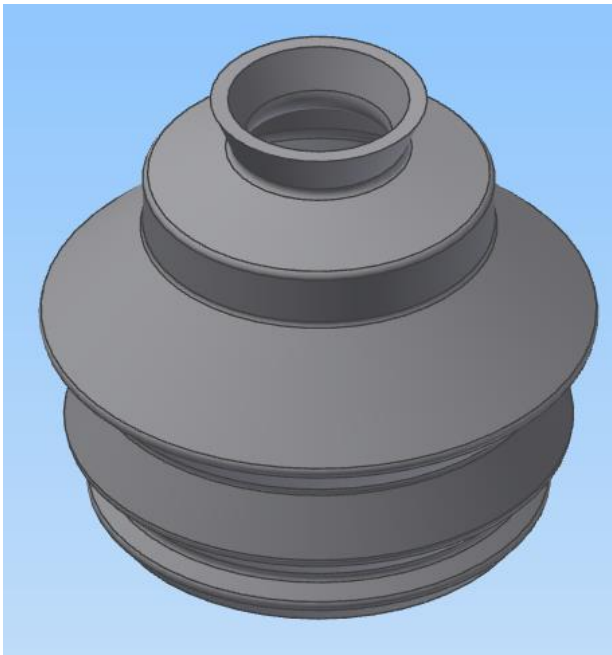
Two examples of sketch profiles.

# Bronze Age Section Mold Project

4. Revolve the profile to create the vessel.

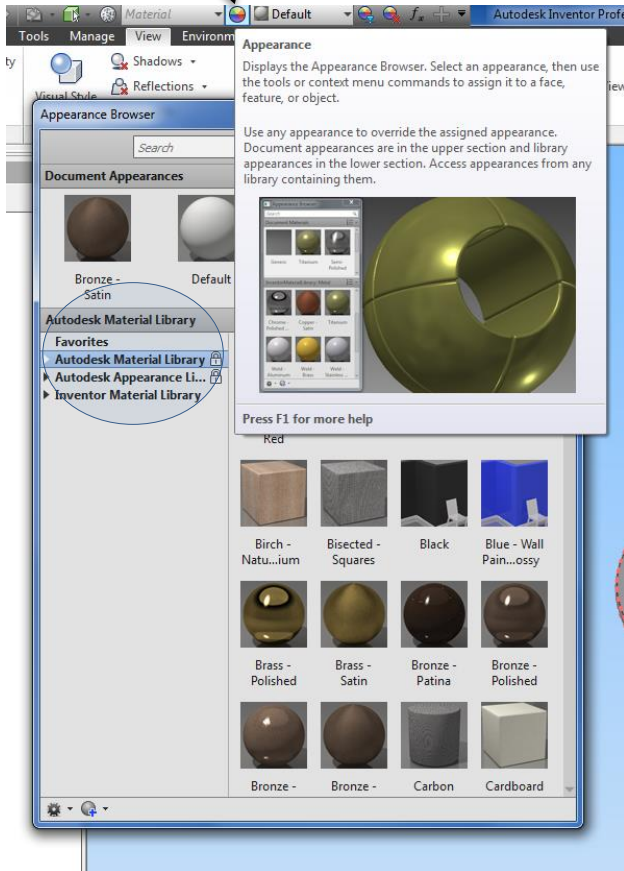


6. Create a *1 cm shell* on the vessel using the top, flat face.



# Bronze Age Section Mold Project

7. Change the color to Bronze (there are a few Bronze choices – check the *Appearance Browser* > *Autodesk Material Library*, *Autodesk Appearance Library* and the *Inventor Material Library*.)

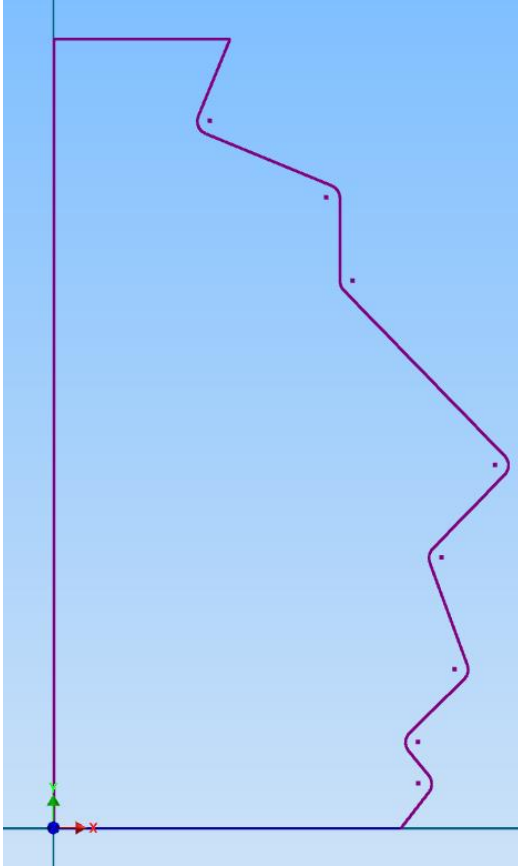



8. Save the design as *vessel\_INL\_CAD\_1*, using YOUR initials and YOUR class period.

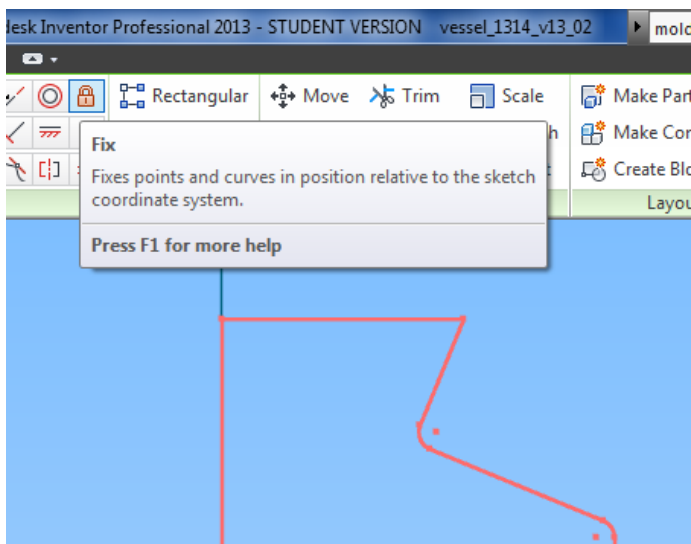
# Bronze Age Section Mold Project

## Part II – Create the *Interior Clay Mold*


1. Open the **Vessel** design. Save As... *interior\_mold\_INL\_CAD\_3*.
2. **Delete** the “*Shell*” feature.
3. Double click on the **Sketch** of the **Revolve**. Delete *all dimensions* from the sketch.

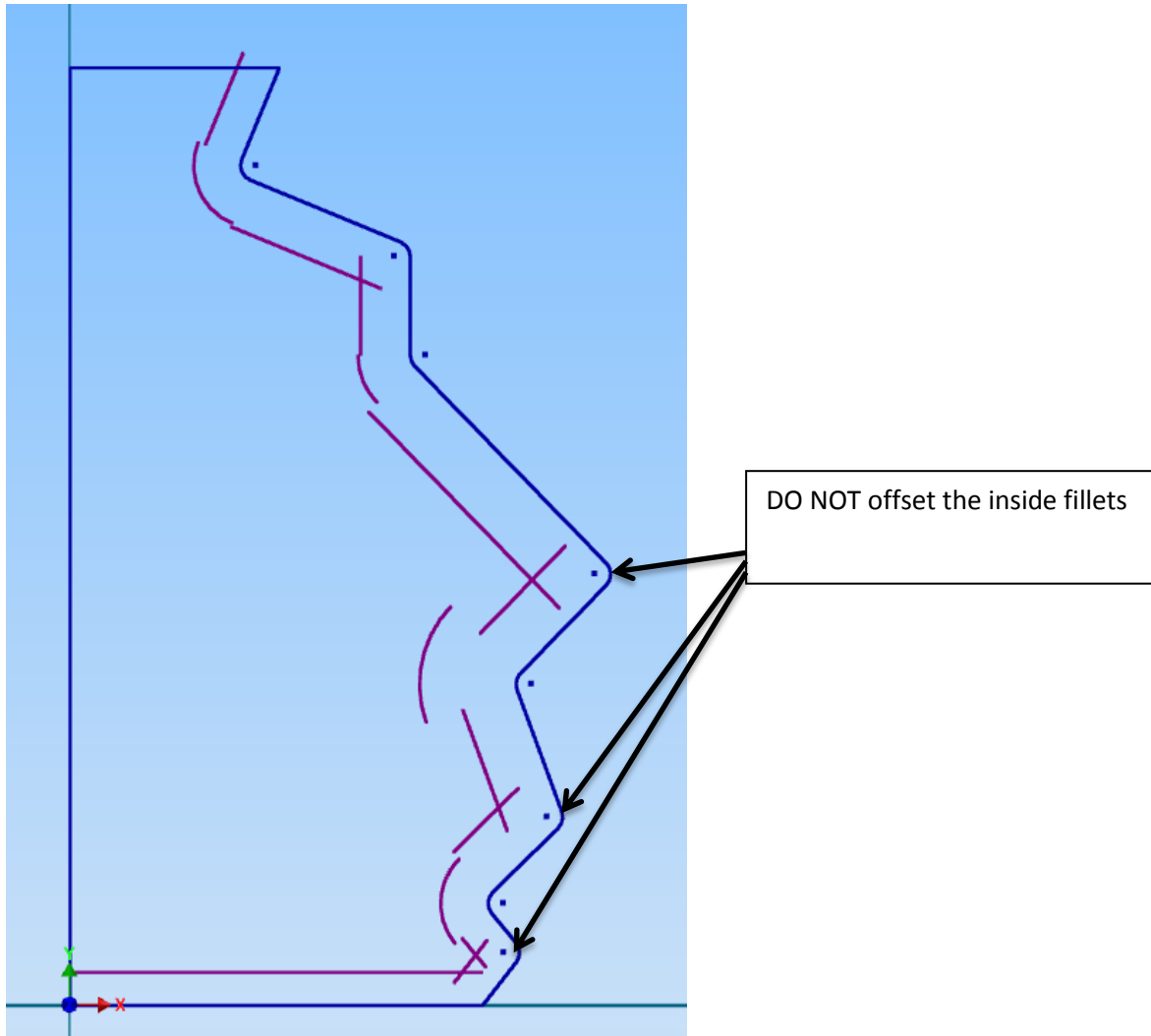


4. Select ALL of the lines of the sketch and **FIX** them using the *fix* tool . This will keep the lines from moving when you use the offset tool – that’s next.



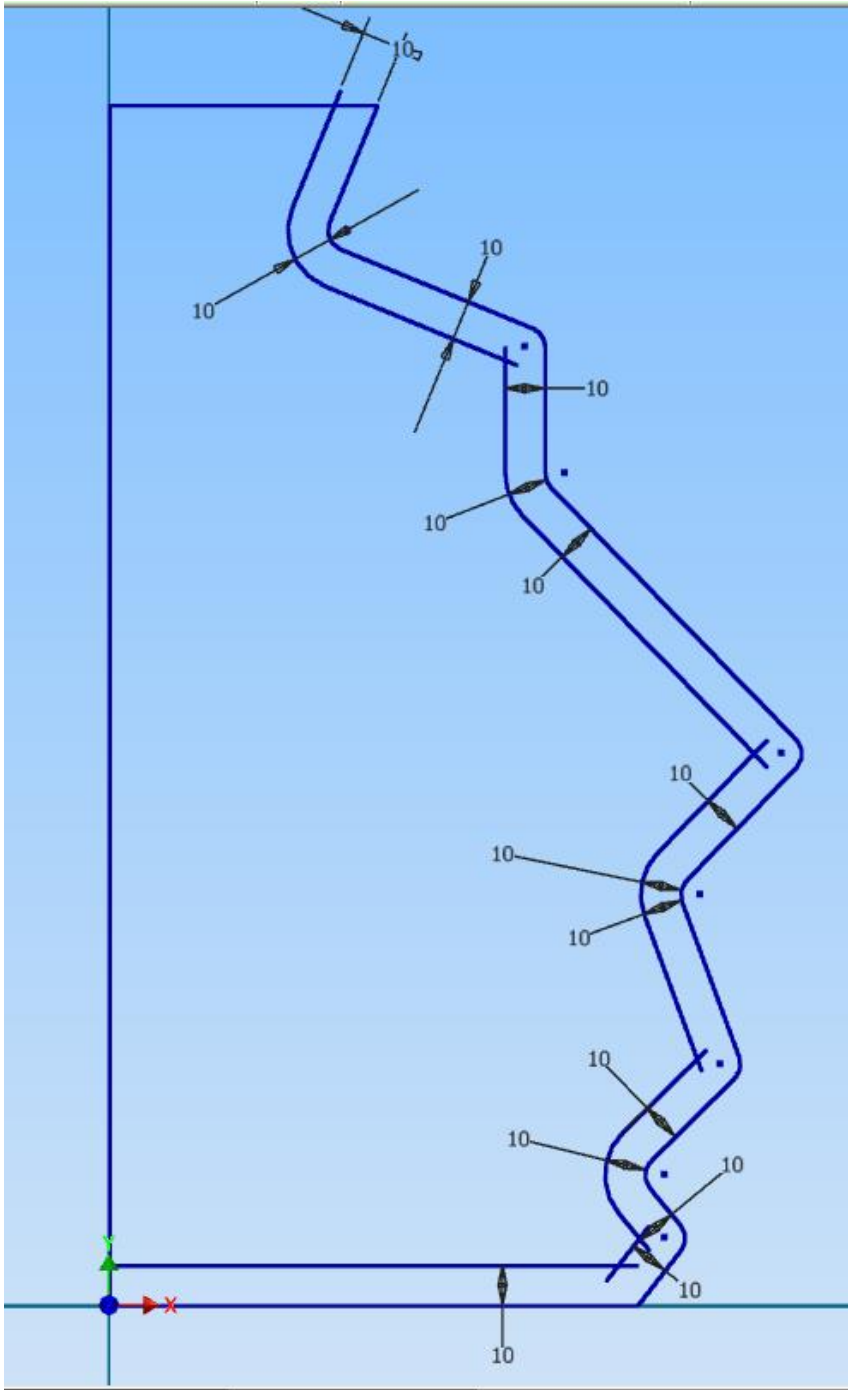
# Bronze Age Section Mold Project

5. Use the *offset tool*  to offset ***MOST*** of the lines inside of the vessel sketch. Do not offset the inside fillets. VIDEO 1.



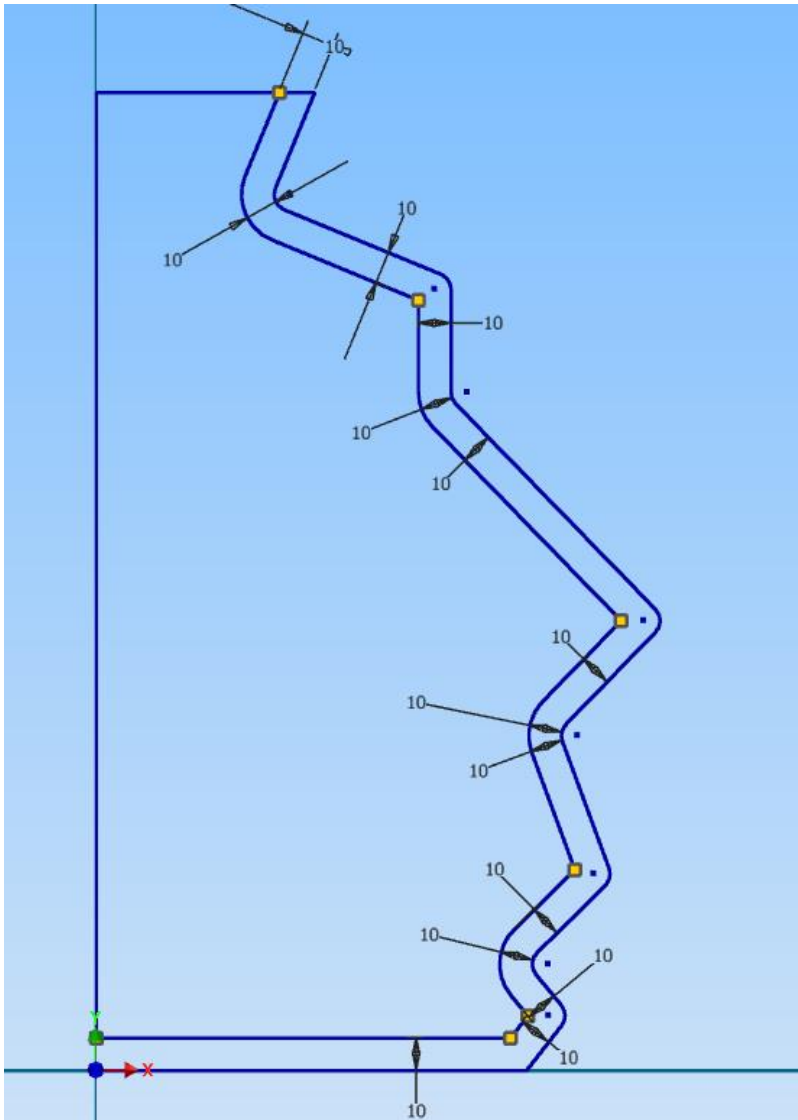
# Bronze Age Section Mold Project

6. Dimension the distance of the offset line segments to 10 mm (one cm). See below:  
VIDEO 2



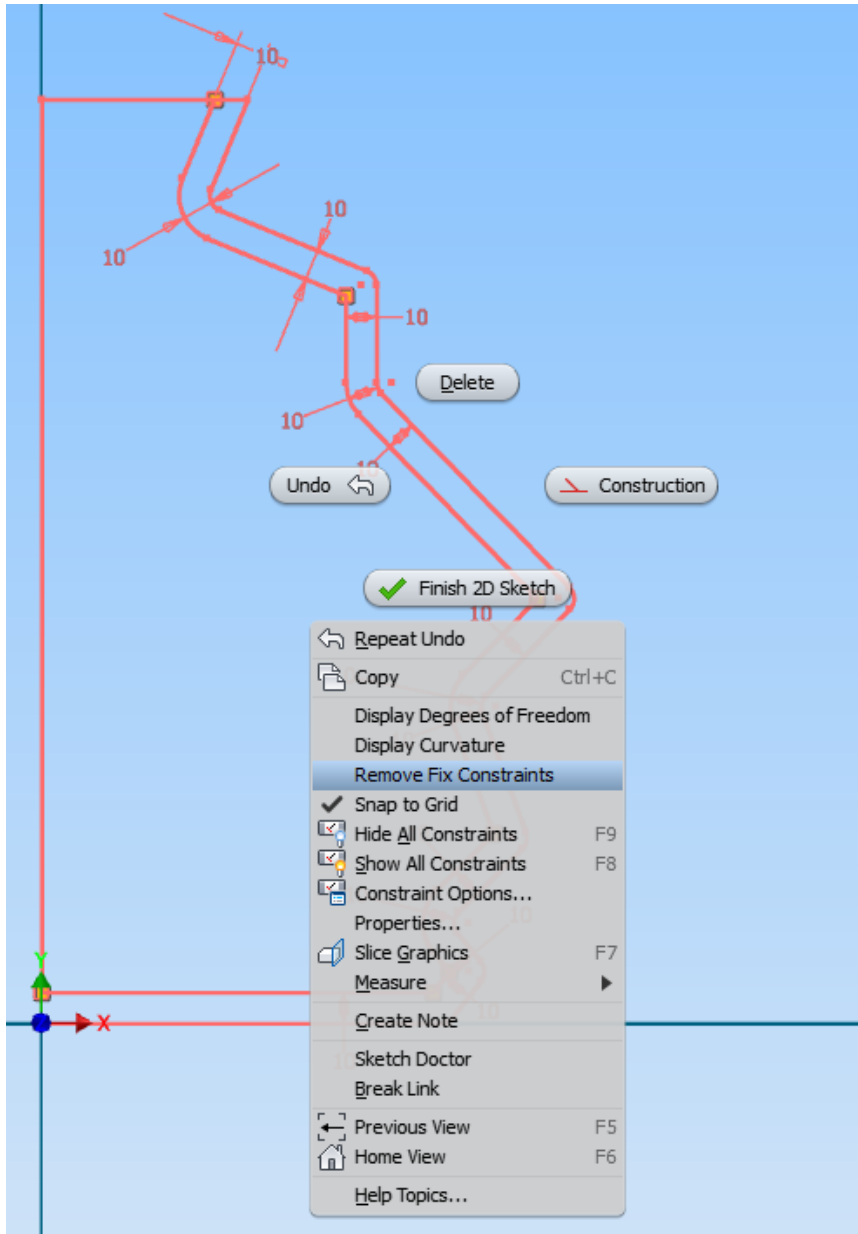
# Bronze Age Section Mold Project

7. Next, trim all of the intersecting lines VIDEO 3.



# Bronze Age Section Mold Project

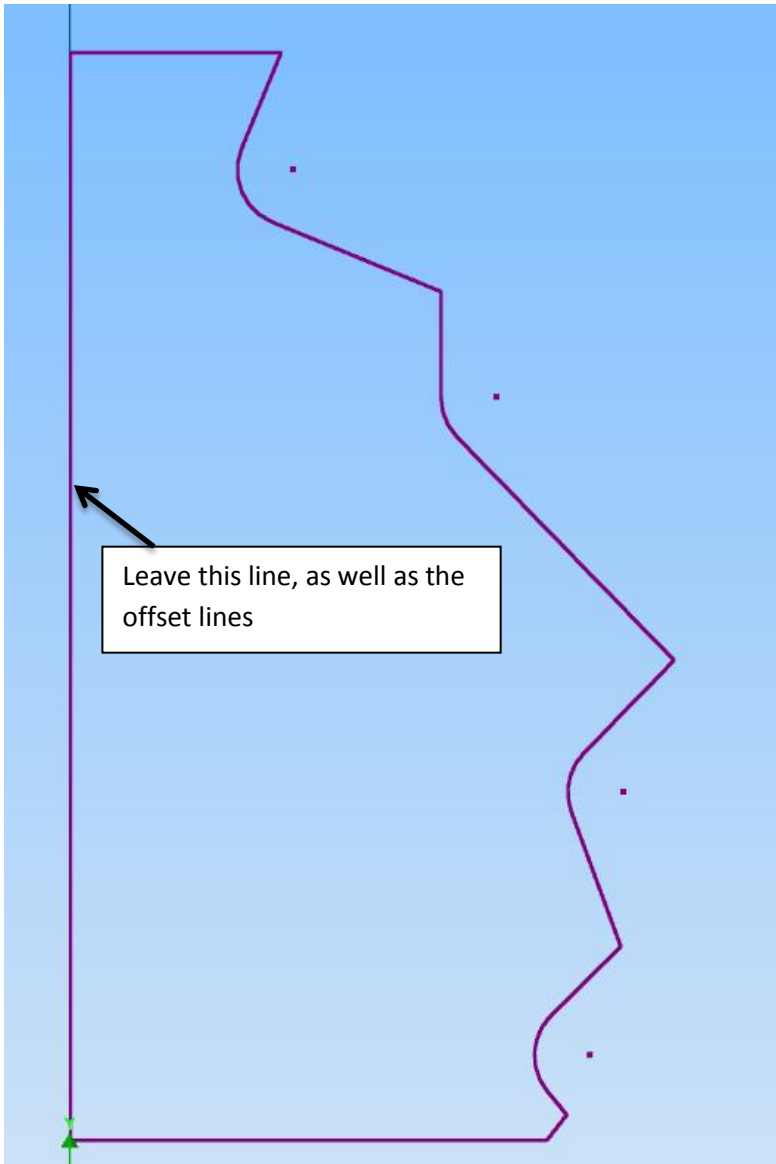
- Next, remove all of the *dimensional constraints* (dimensions) VIDEO 4.
- Next, *select ALL* of the sketch lines > **Right Click** > **Remove Fix Constraints**. This will allow you to *trim* the outside lines.





# Bronze Age Section Mold Project

10. Trim the profile so that the ALL of the *outer, original* profile lines are removed. Leave JUST the *inside* offset profile and the lines at the center of the inside mold VIDEO 5.



11. Right Click on the Sketch Doctor to eliminate the overlapping lines created when you used the offset tool. VIDEO 6

12. Click the check mark  to finish the sketch.


13. Change the material or color to reflect a reddish clay (browse in the materials and appearances – you will find something!)

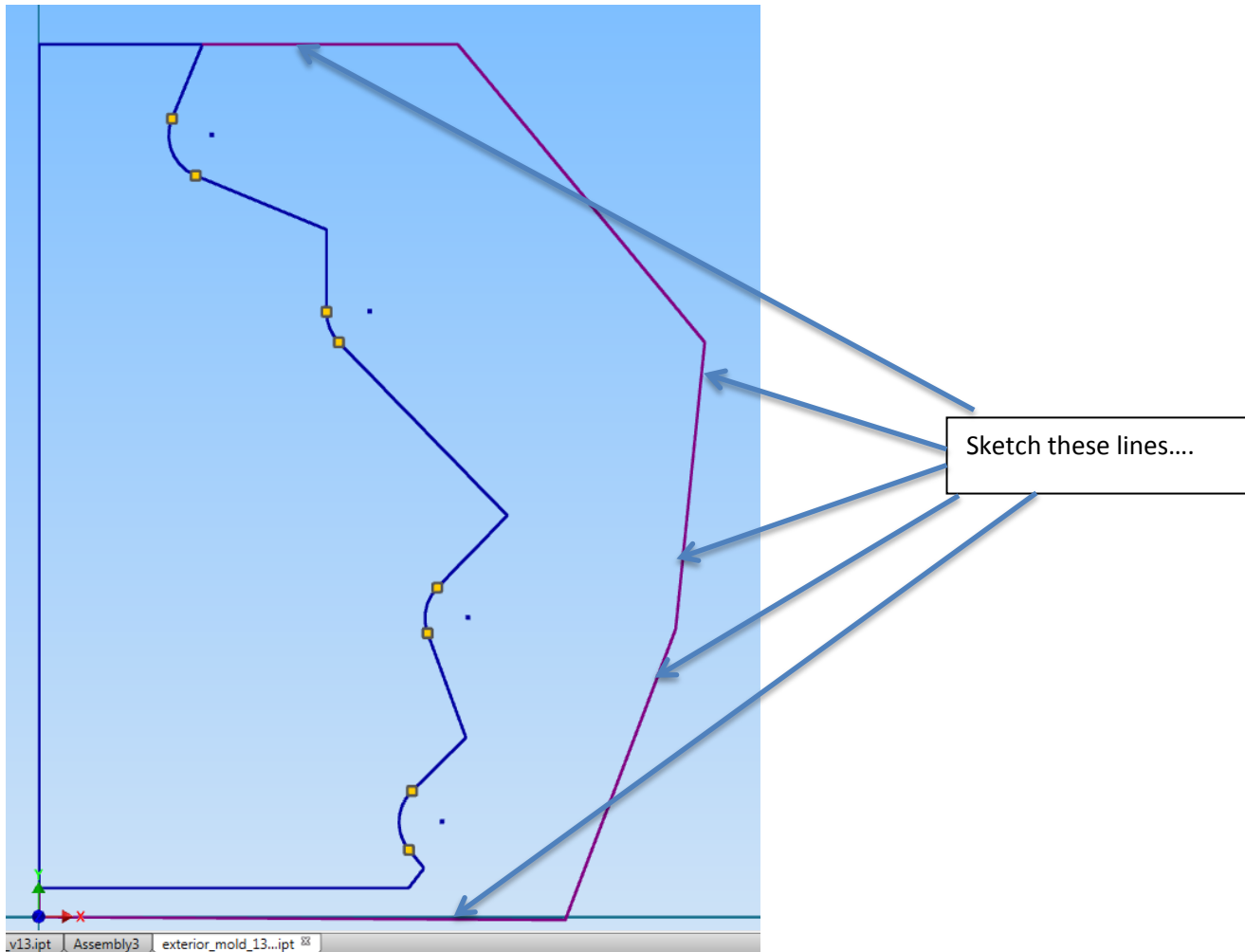
## Bronze Age Section Mold Project

14. In order to be able to set the *interior clay mold* into the outside mold pieces, the ancient Chinese created small “spacers” (remember the animation from Princeton University?) You will need to create “spacers” on the bottom and sides of the mold. [VIDEO 7](#)

# Bronze Age Section Mold Project

## Part III – Create the *Exterior Clay Mold*

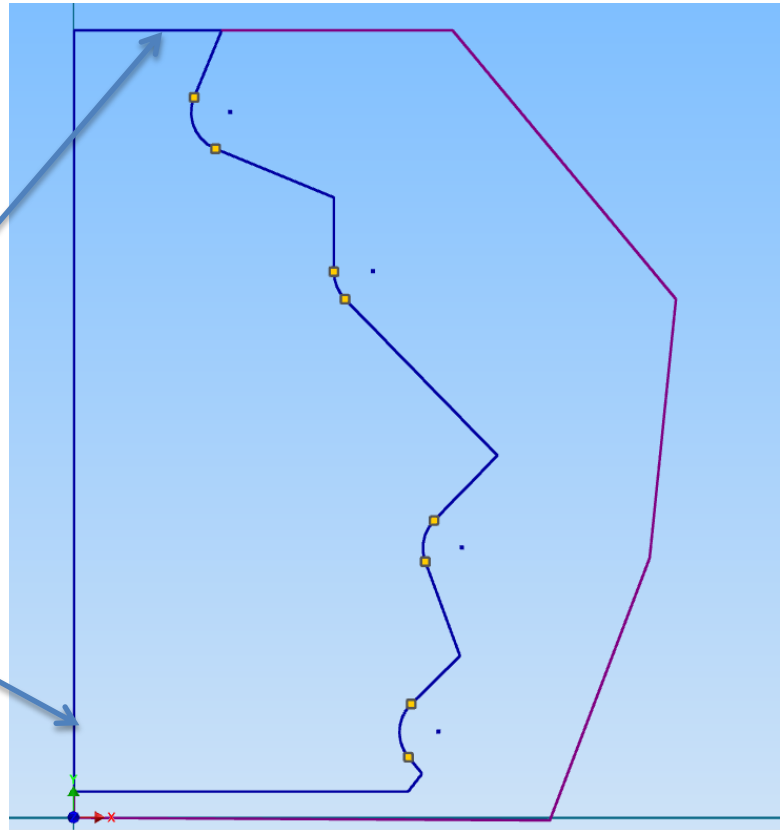
1. Open the **Vessel** design. Save As... *exterior\_mold\_INL\_CAD\_3*. Delete the “*Shell*” feature.
2. Double click on the *Sketch* of the *Revolve*. Delete *ALL* dimensions, if there are any.
3. *Select ALL* of the lines of the sketch and *FIX* them using the *fix* tool .
4. *Sketch* the outside of the mold. See below:



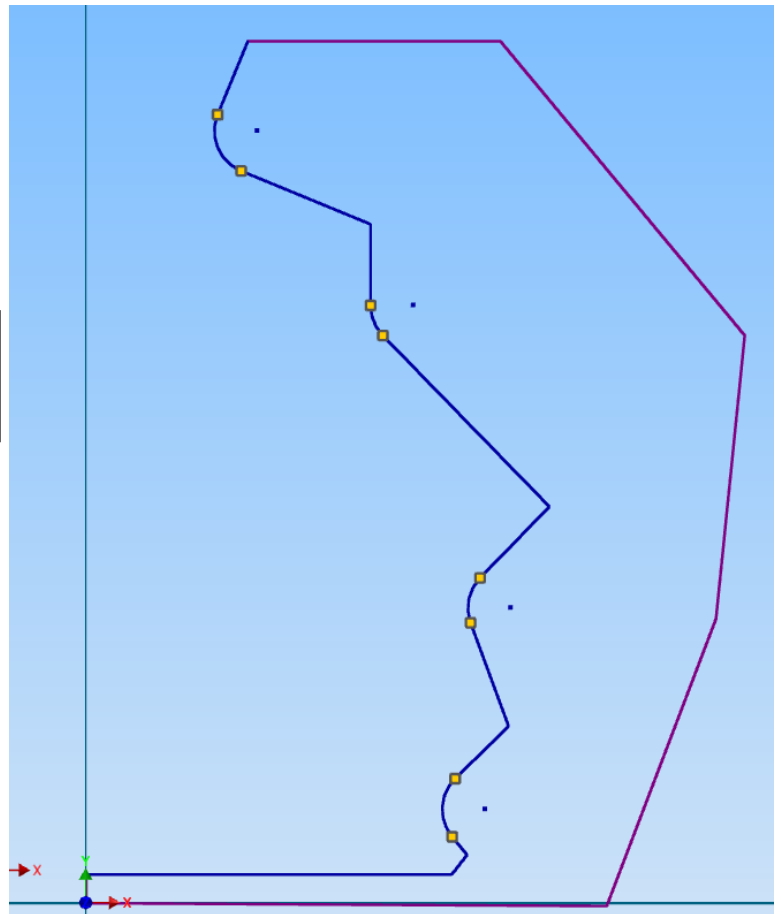
# Bronze Age Section Mold Project

5. Select *the original lines*>Right Click>*Remove Fix Constraints*. *Trim* unneeded lines.

Remove these lines....

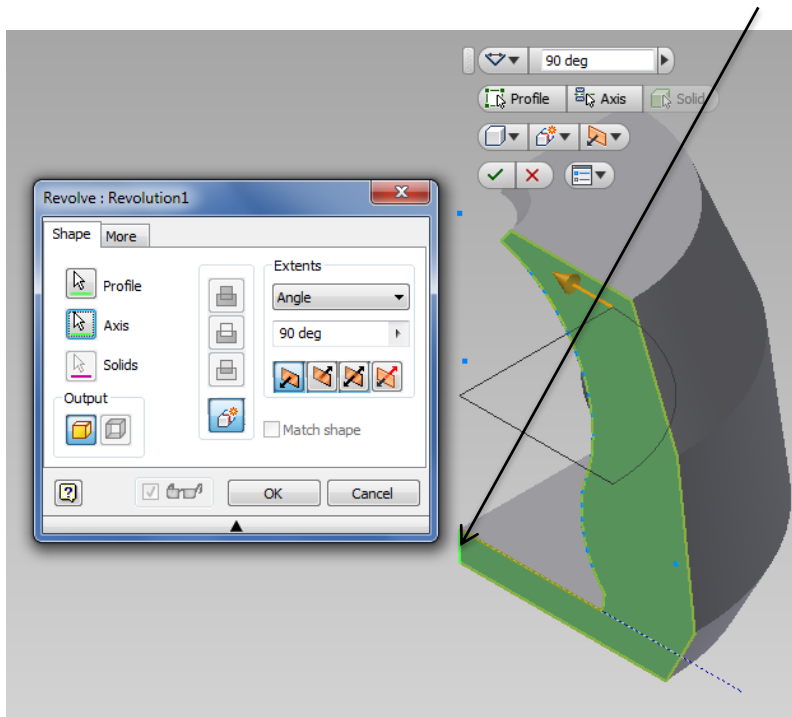


Sketch should look similar to the sketch at right.



# Bronze Age Section Mold Project

6. **Finish** the sketch and **accept** the error.
7. Double Click on the **revolve** and select the **new axis**. Revolve the mold to 90 degrees.

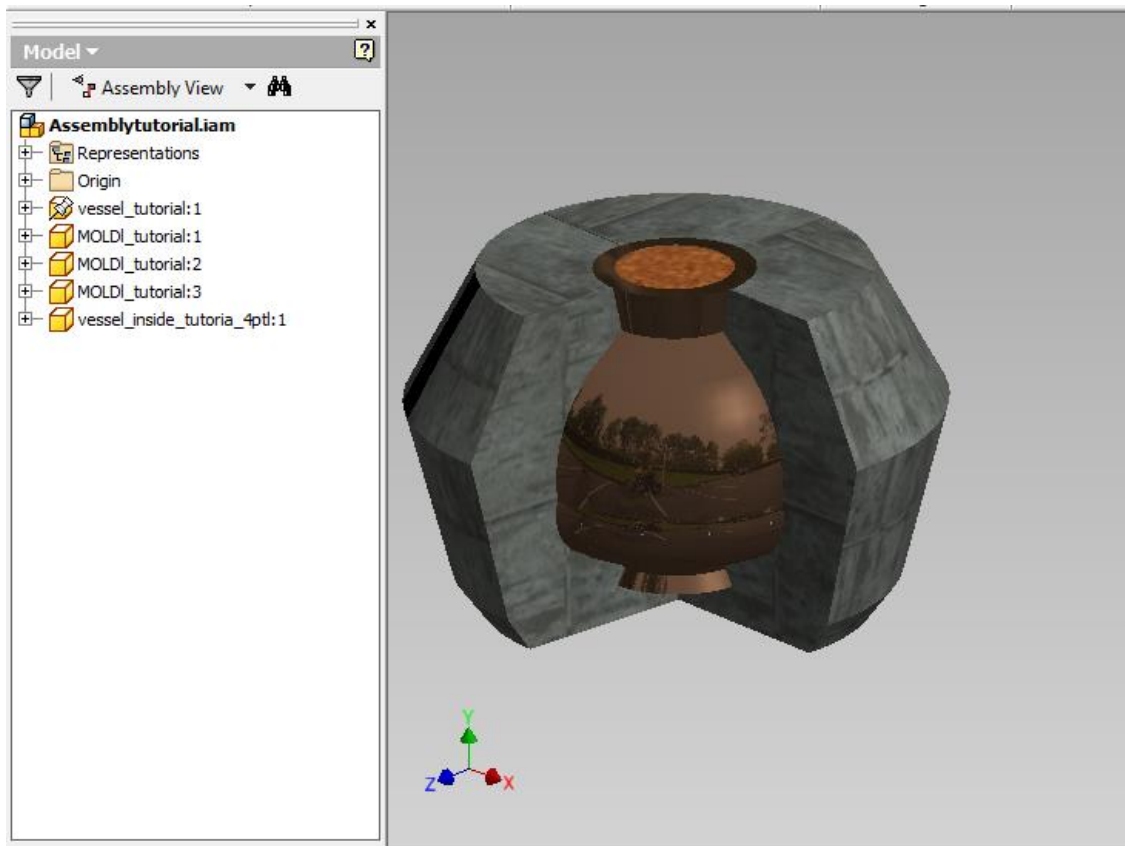


8. **Color** or **change the appearance** of the mold piece.

# Bronze Age Section Mold Project

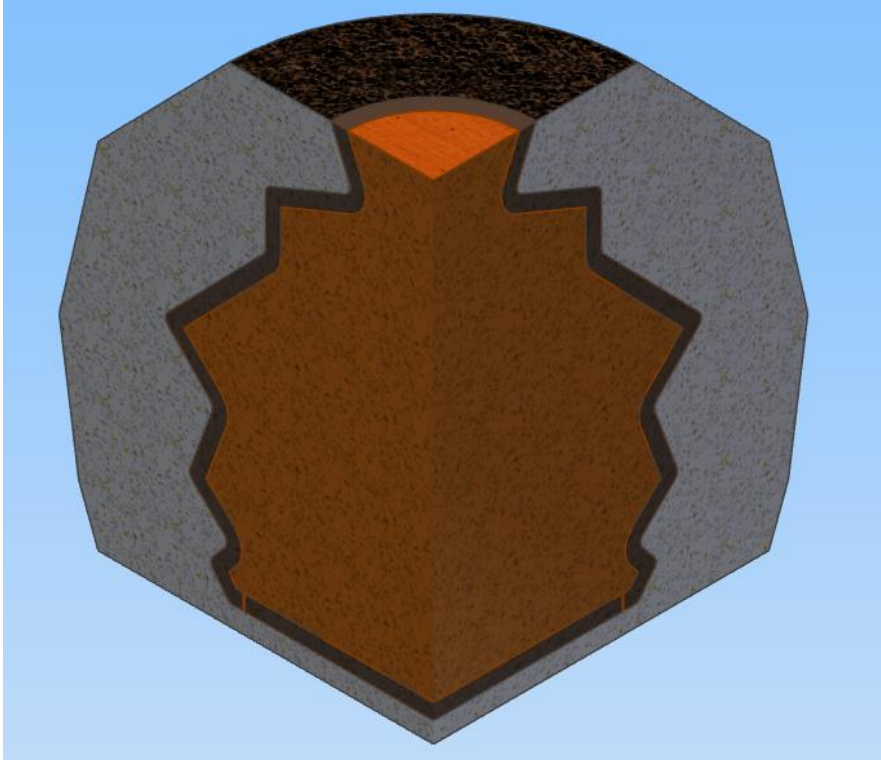
## Part IV – Create the *Assembly*

1. Assemble the exterior mold pieces, vessel and interior mold using *Mates*, *Flushes* and *Mate Center*. The example below is missing one of the molds so that you can see inside.

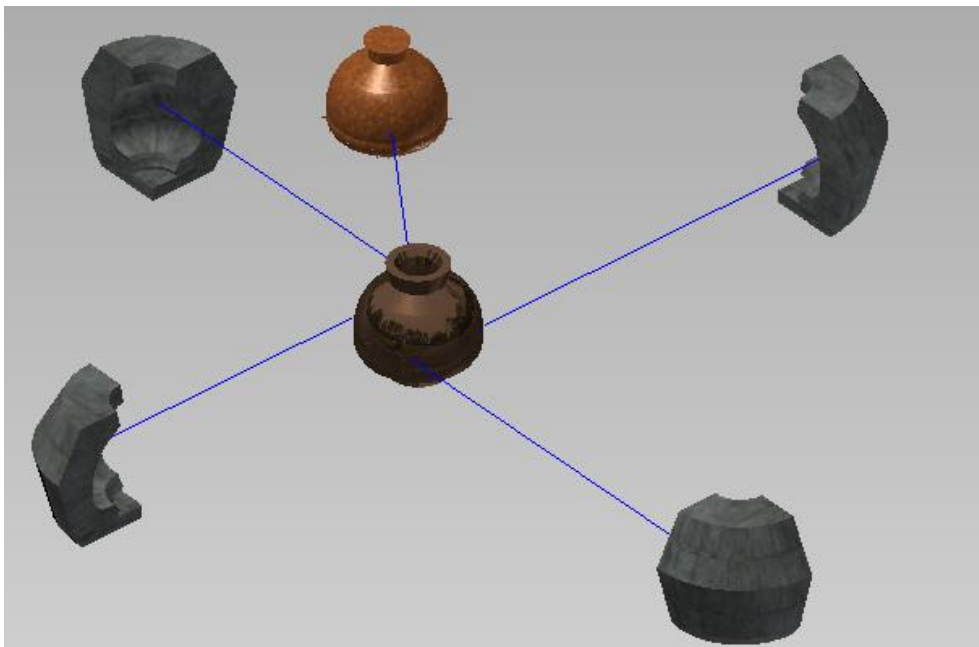


# Bronze Age Section Mold Project

2. Go to View > Quarter Section View. Choose both vertical workplanes from the Browser. You should see a “Quarter Section View” like the one below:



3. Inspect your assembly, making sure that none of the parts are overlapping.
4. Check your assembly by creating a *presentation* of your Bronze Mold Assembly.



# Bronze Age Section Mold Project

5. While in *Presentation* mode, create an *animation*. Experiment with the controls and options to create your best one!