Departamento de Computação

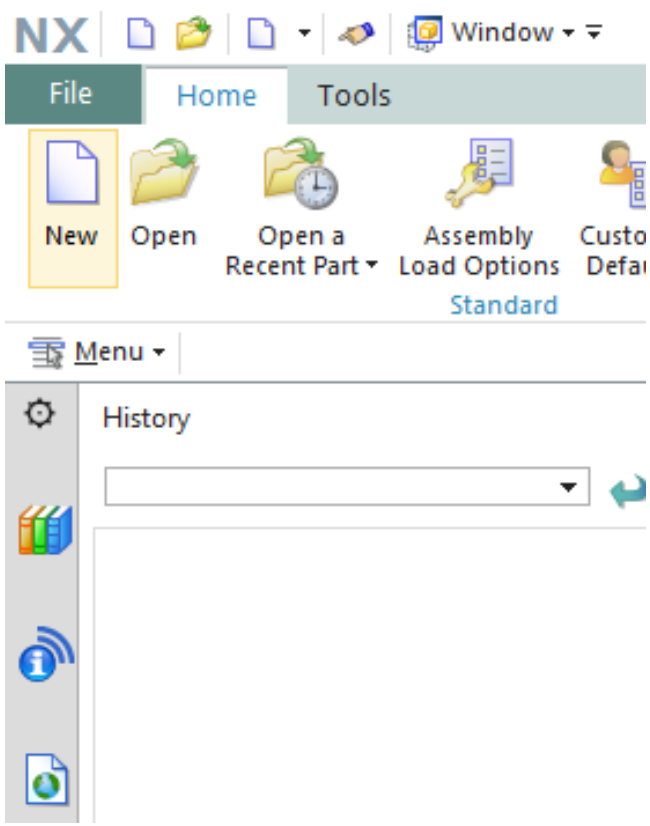
Projeto e Manufatura Assistidos por Computador 27260 A

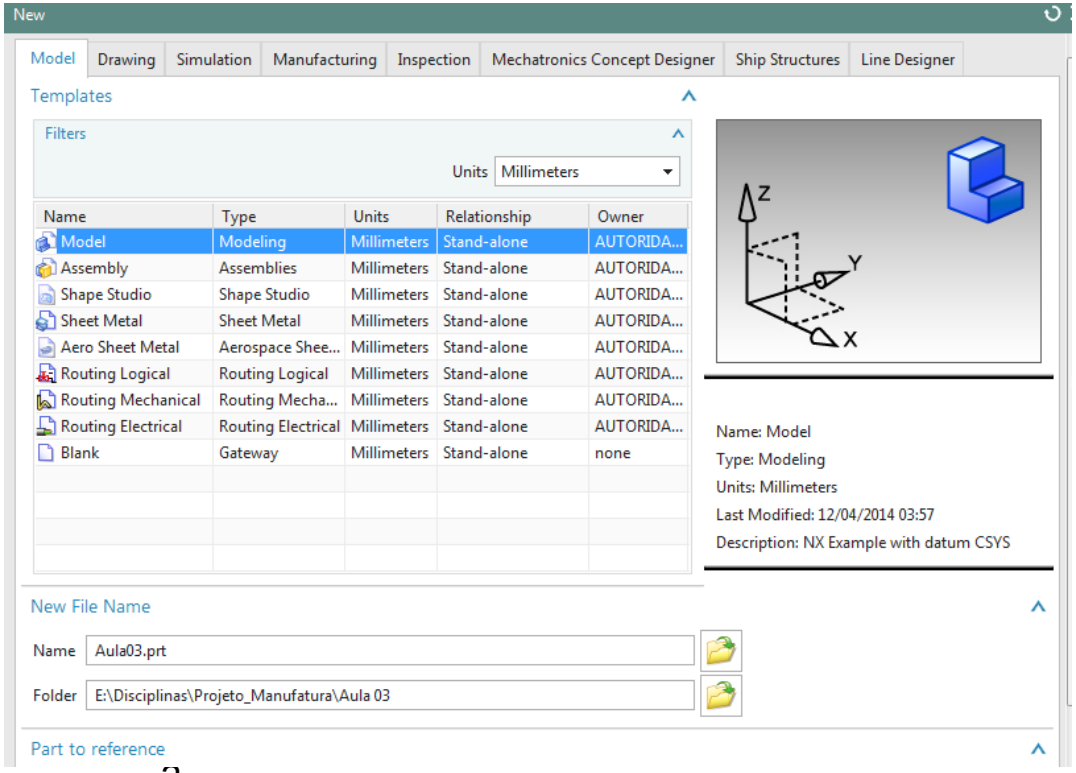
Aula 04 – Lab06

Departamento de Computação
Prof. Kelen Cristiane Teixeira Vivaldini

Aula 04

1. “**File**” -> “**New**” - > “Model” -> Create a new file and name it as **Arborpress_base.prt**





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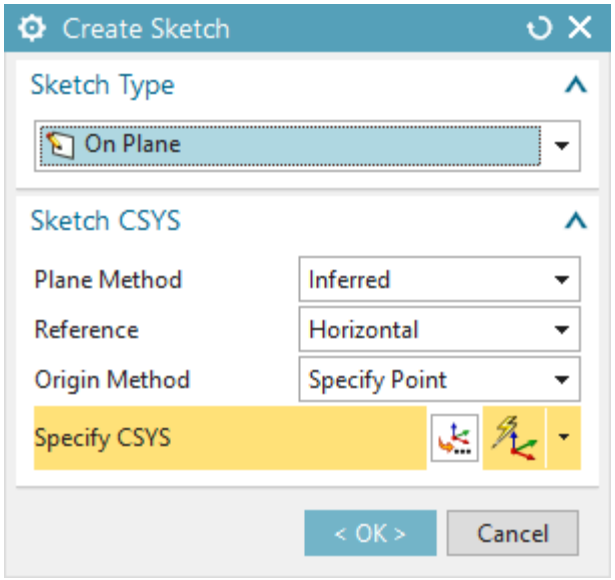
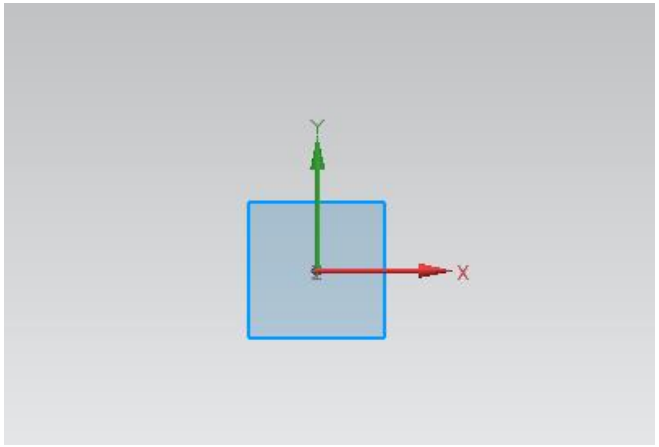
2. Click on the **Sketch** button and click **OK**





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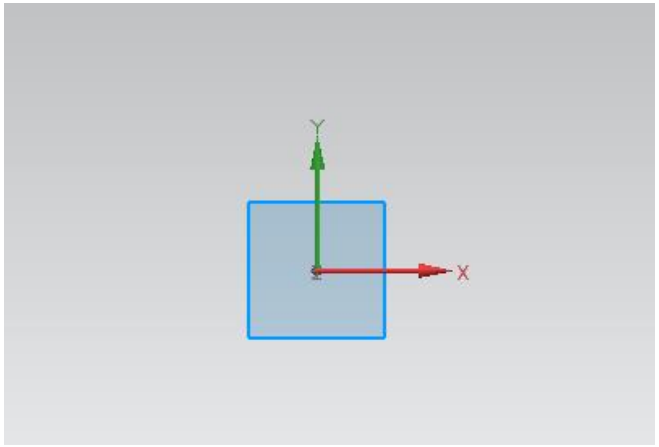

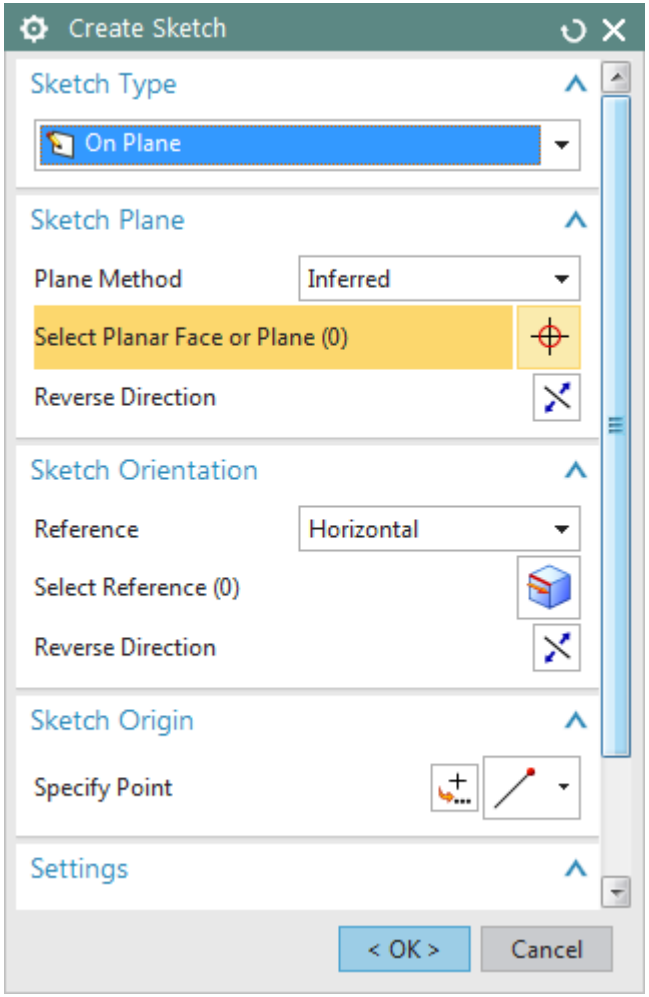

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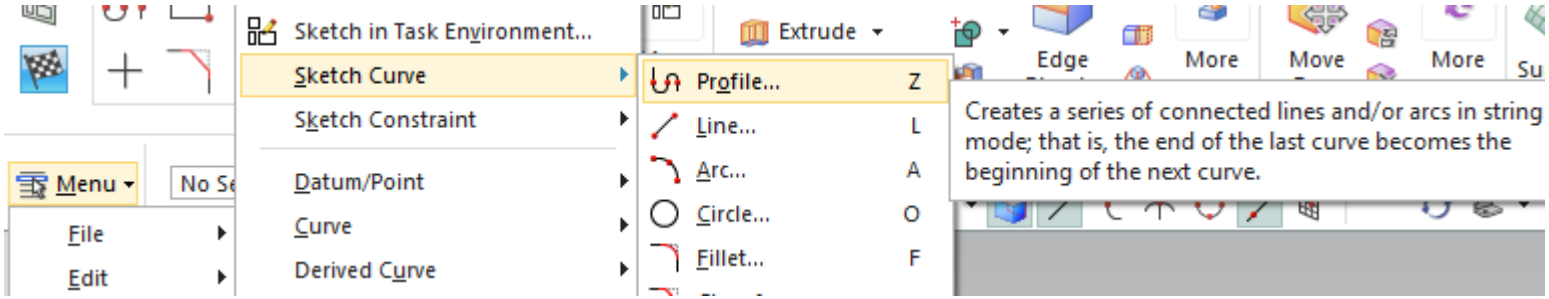
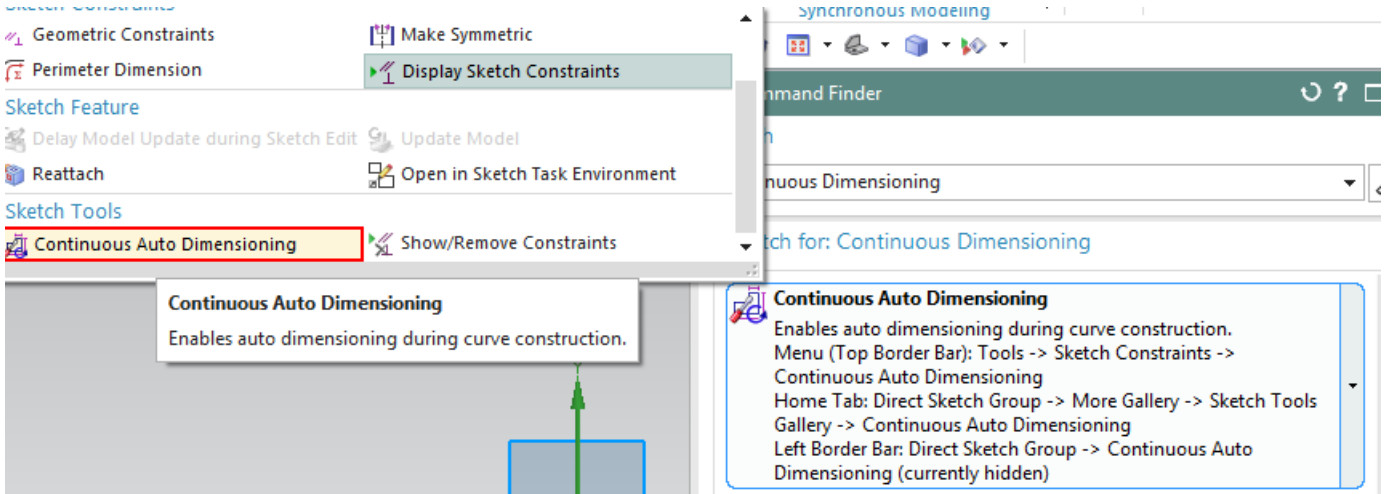
3. Choose **Menu →Insert →Sketch Curve →** **Profil**e or click on the Profile icon in the Direct Sketch group (remember to deactivate **Continuous Dimensioning**)





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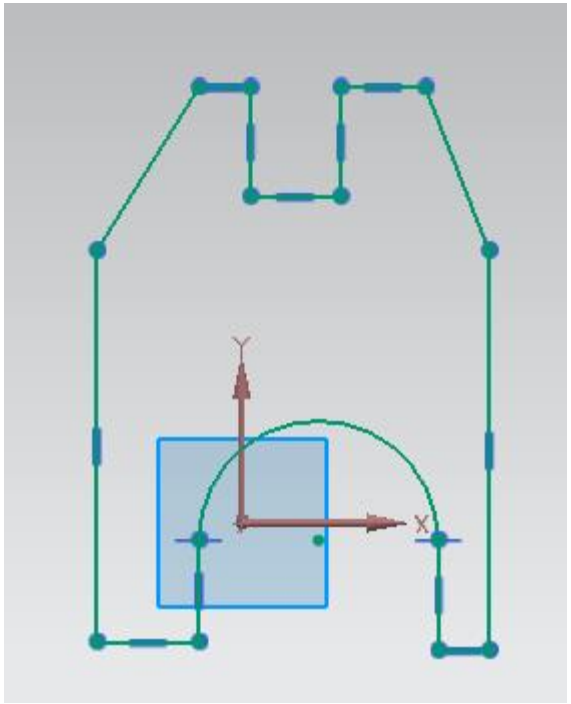
4. Draw a figure similar to the one shown on right.



While making continuous sketch, click on the **Line** icon on the **Profile** dialog box to create straight lines and the **Arc** icon to make the semicircle. (Look at the size of the XY plane in the figure. Use that perspective for the approximate zooming). Once the sketch is complete, we constrain the sketch. It is better to apply the geometric constraints before giving the dimensional constraints

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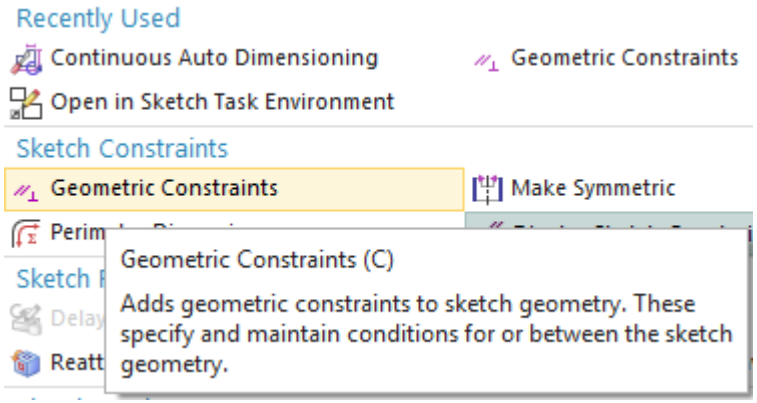
5. Choose **Geometric Constraints (C)** or click on the **Constraints** icon in the side toolbar



Obs. Now we start by constraining between an entity in the sketch and a datum or a fixed reference.

First, place the center of the arc at the origin. This creates a reference for the entire figure. We can use the two default X and Y axes as a datum reference.

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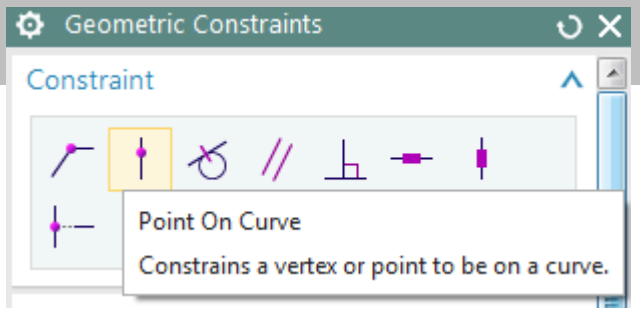
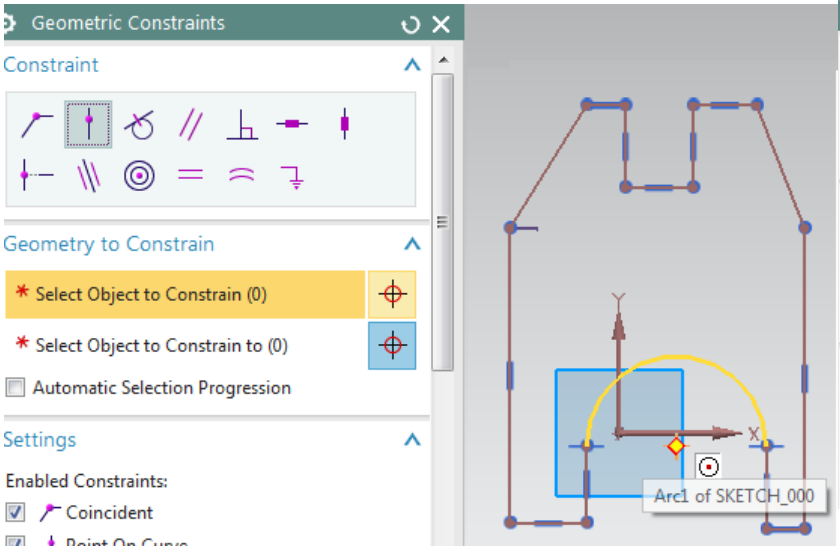
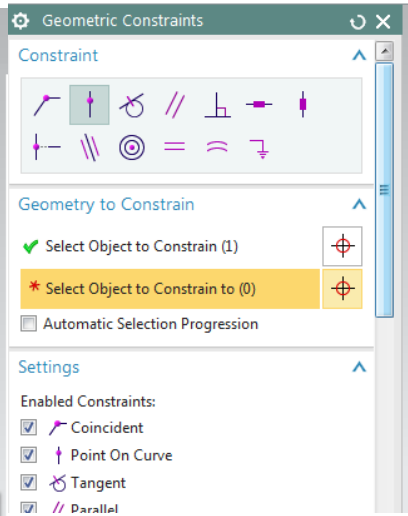
6. Select **Point on Curve** constraint

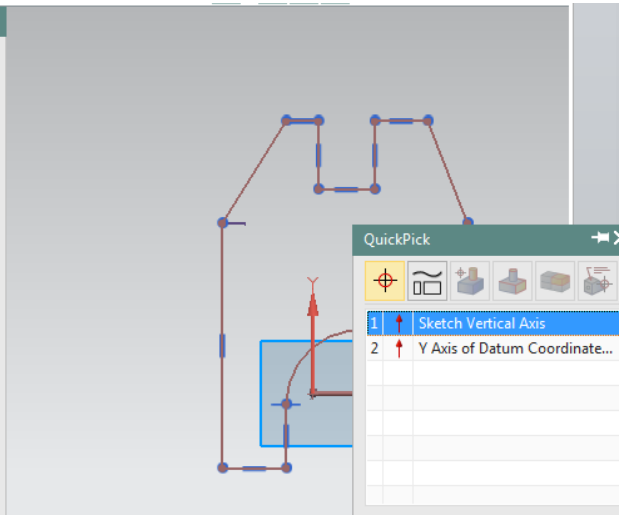


7.Select the Y-axis and then the center of the arc

8. Repeat the same procedure to place the center of the arc on the







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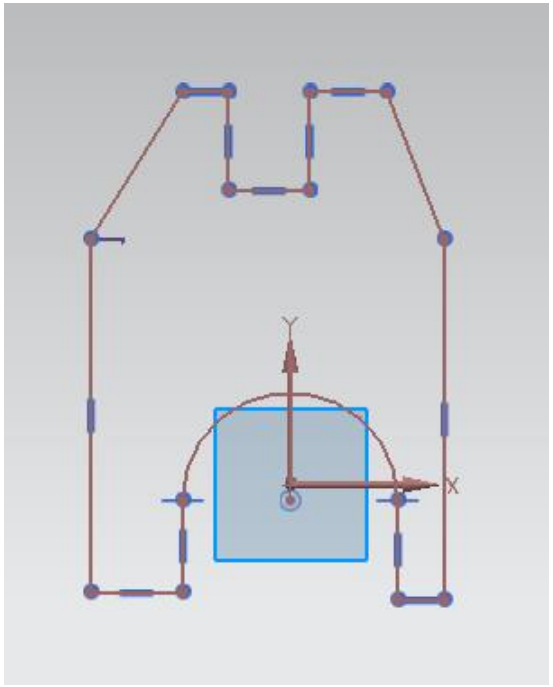
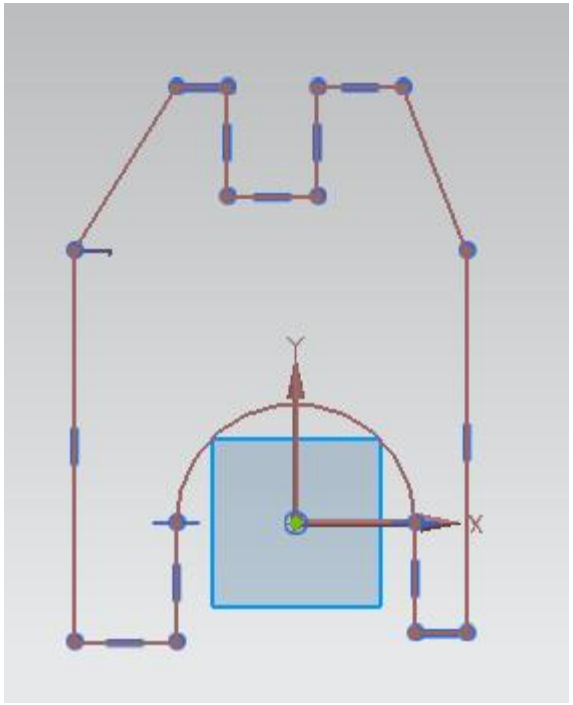


8. Repeat the same procedure to place the center of the arc on the X-axis



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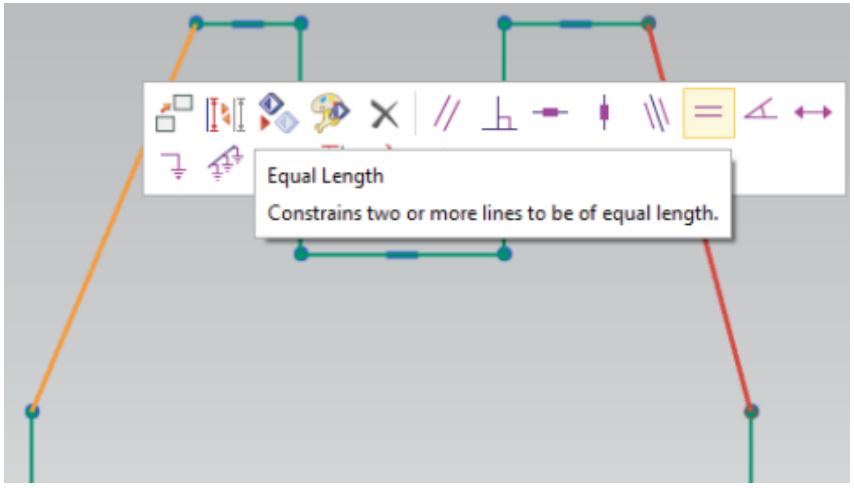
Do not worry in case the figure gets crooked. The figure will come back to proper shape once all the constraints are applied. However, it is better to take into consideration the final shape of the object when you initially draw the unconstrained figure.

9. Select the two slanted lines and make them **Equal Length**



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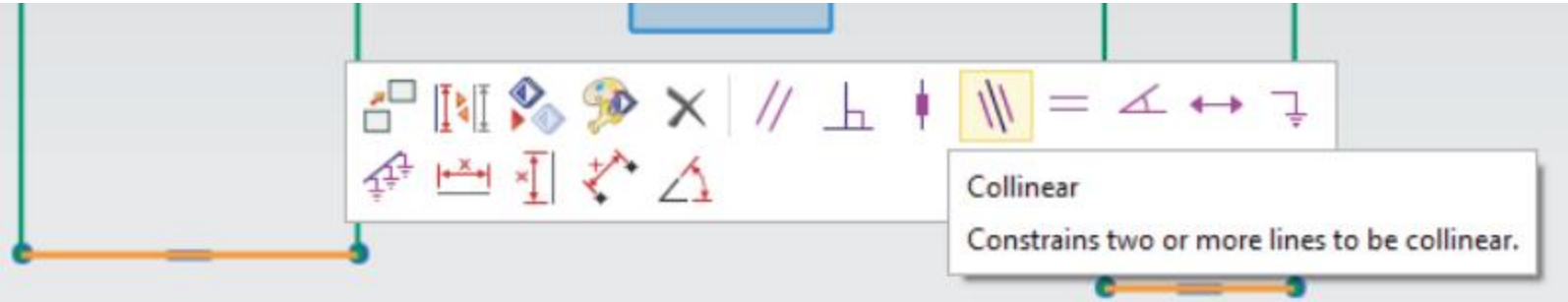
10. Similarly select the two long vertical lines and make them **Equal Length**

11. Select the bottom two horizontal lines and make them **Collinear** and then click on the same lines and make them **Equal Length**



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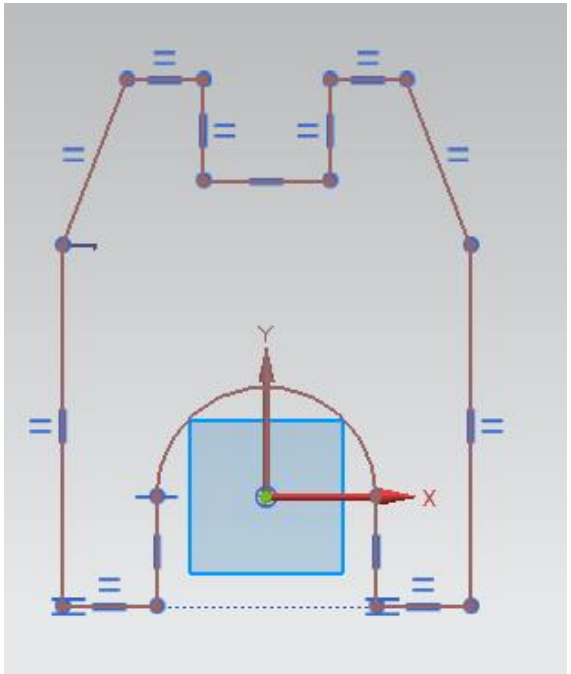
12.



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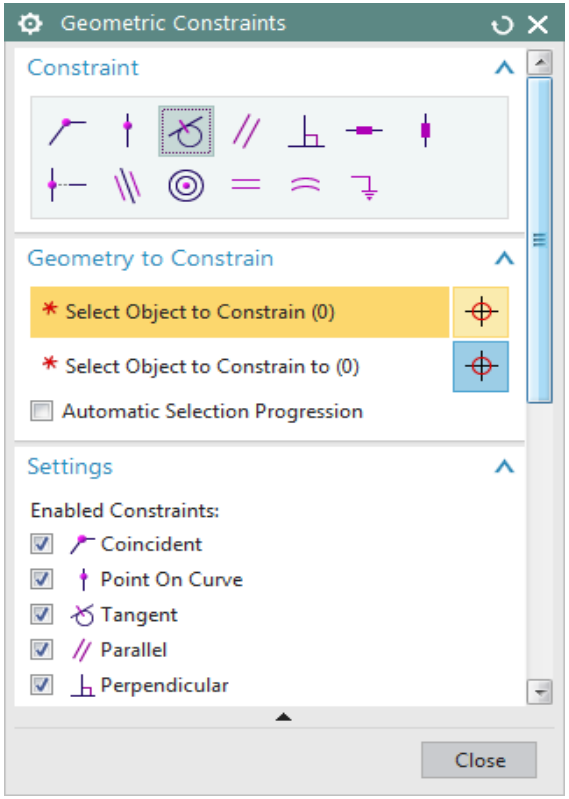
If you **DO NOT** find the two Blue circles (*Tangent Constraints*) near the semicircle as shown in the figure, follow the below steps. Otherwise, you can ignore this.

12. Select the circular arc and one of the two vertical lines connected to its endpoints
13. Select the **Tangent** icon



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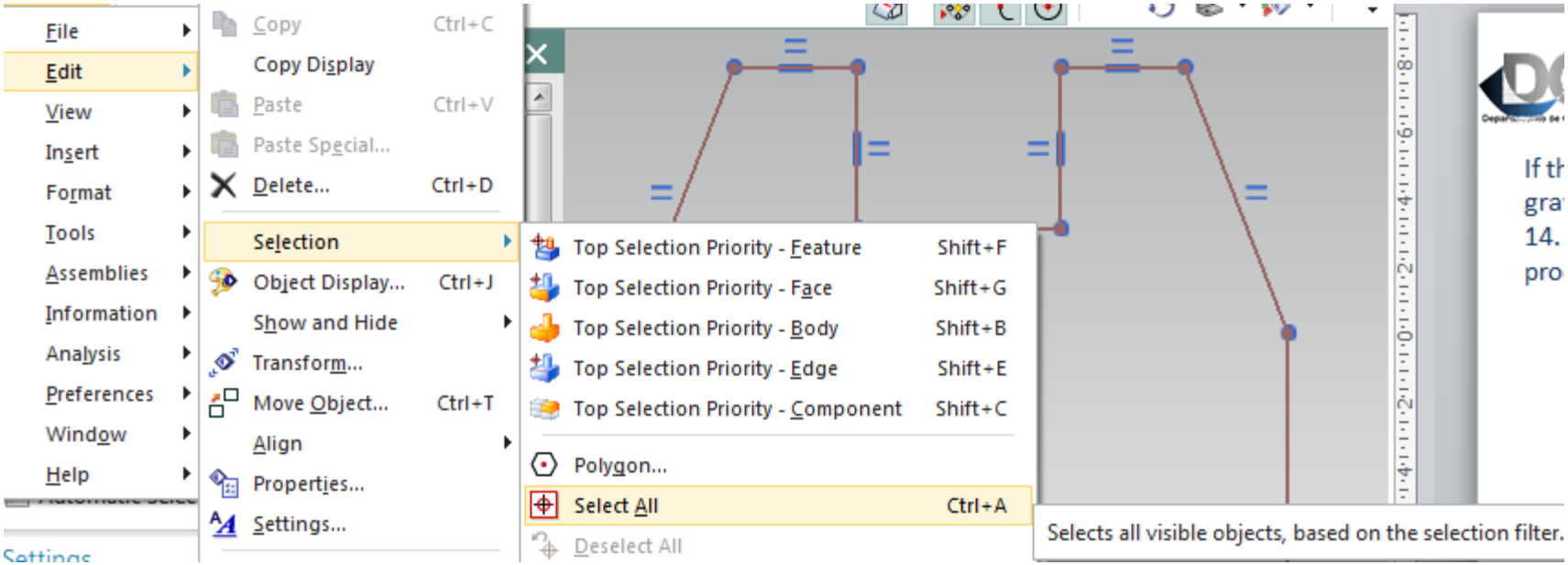
If the arc and line is already tangent to each other, the icon will be grayed out. If that is the case

14. Click on **Edit →Selection →Deselect All**. Repeat the same procedure for the arc and the other vertical line.



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15. Select the two vertical lines and make them **Equal**
16. Similarly select the two small horizontal lines at the top of the profile and make them **Collinear** and **Equal**
17. Similarly select the two vertical lines and make them **Equal**

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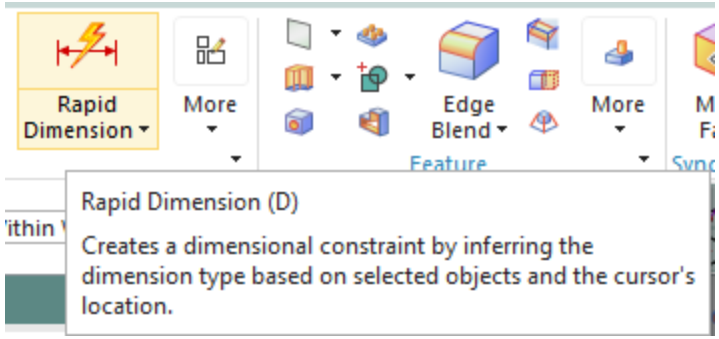
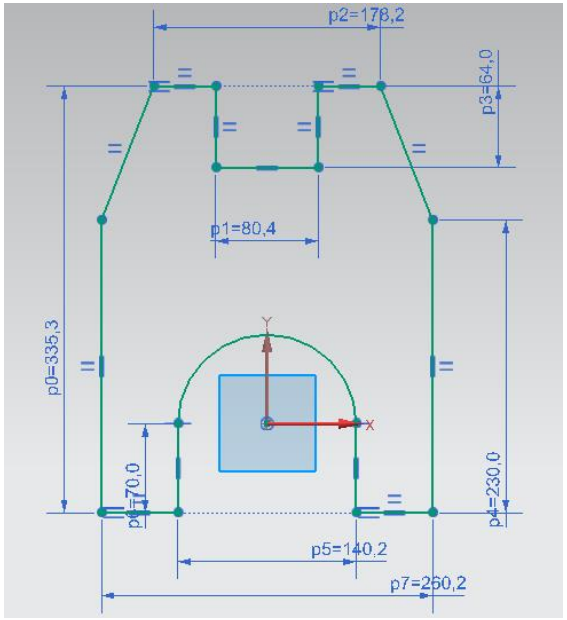
18. Choose the **Rapid Dimension** icon in the **Constraints** toolbar



19. Add on all the dimensions as shown in the following figure without specifying the values



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20. For example, to create a dimension for the top two corners,
21. Click somewhere near the top of the two diagonal lines to select them

While dimensioning, if you find the dimensions illegible, but do not worry about editing the dimensions now.

Now we edit all the dimension values one by one. It is highly recommended to start editing from
the biggest dimension first and move to the smaller dimensions.

Once enough number of dimensions are provided, sketch color changes indicating it is fully defined.

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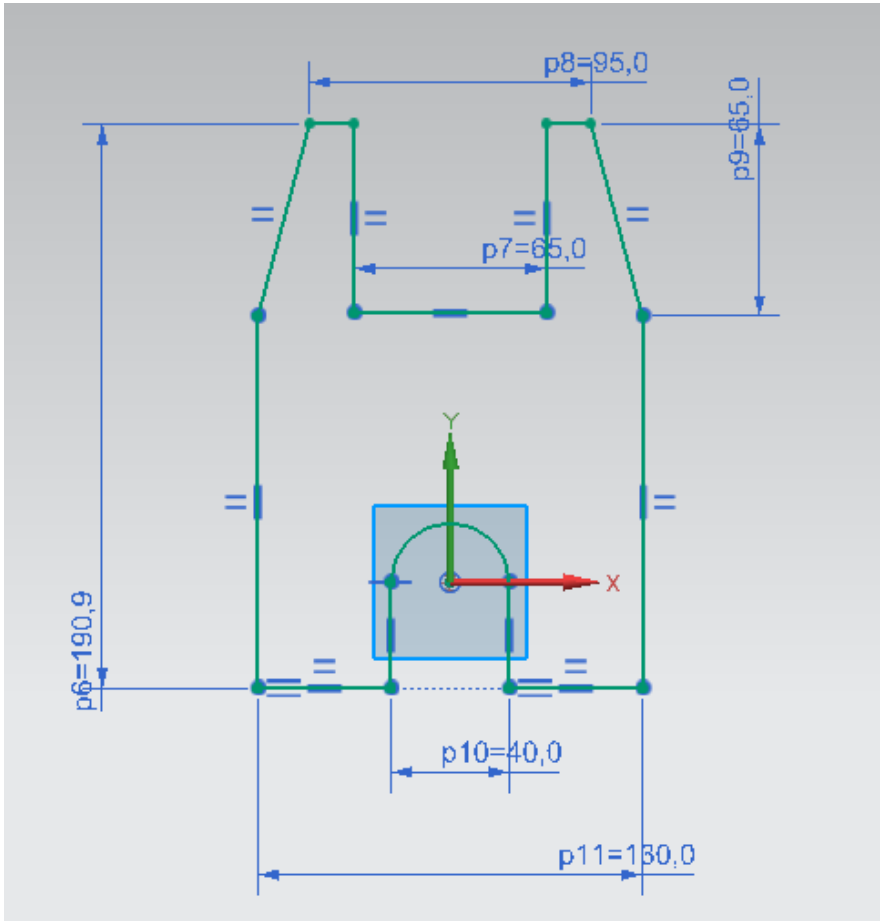
22. Edit the values as shown in the figure below. Double click on each dimension to change the values to the values as shown in figure below



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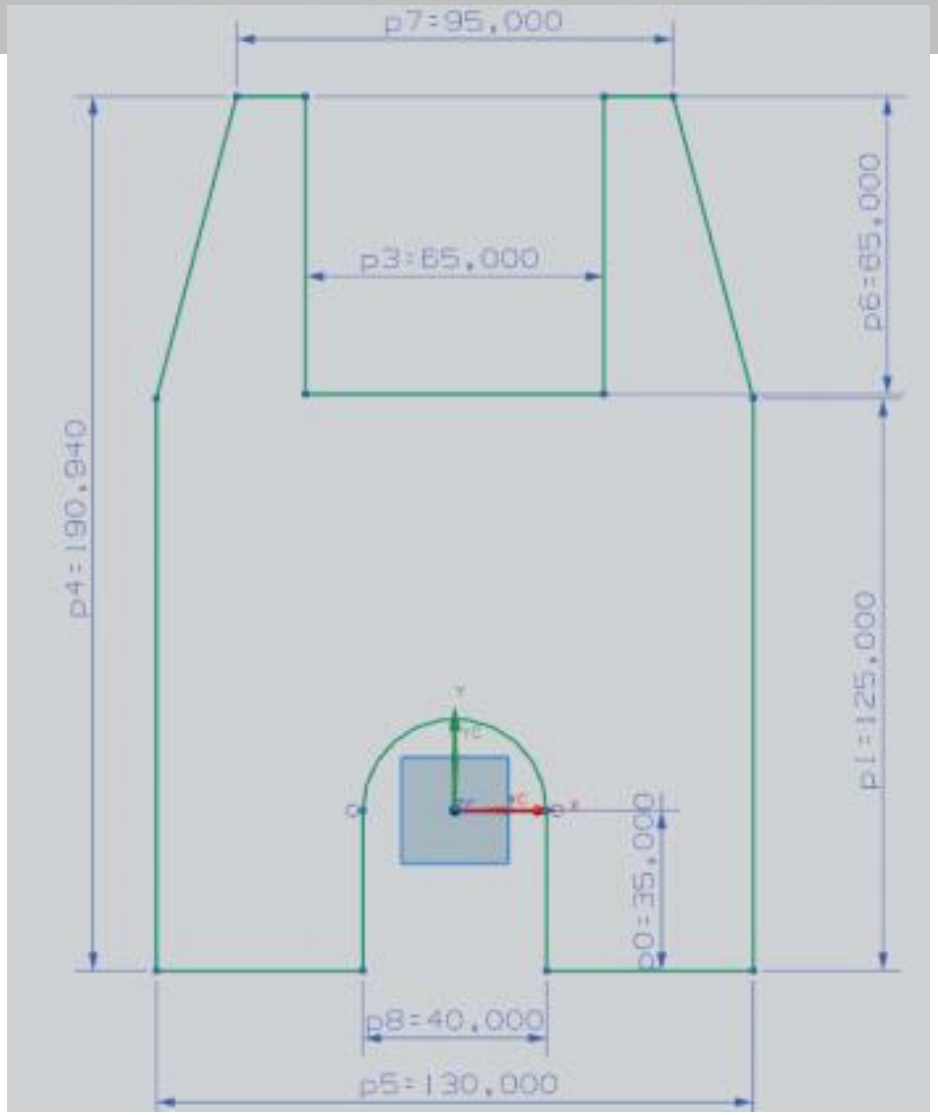

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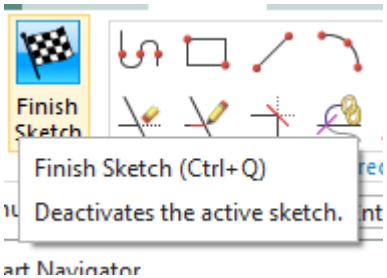
23. Click on the **Finish Flag** on the top left corner or bottom right of the screen when you are finished



24. Click on the sketch and select **Extrude** (this **Feature** is explained in details in the next
sections)

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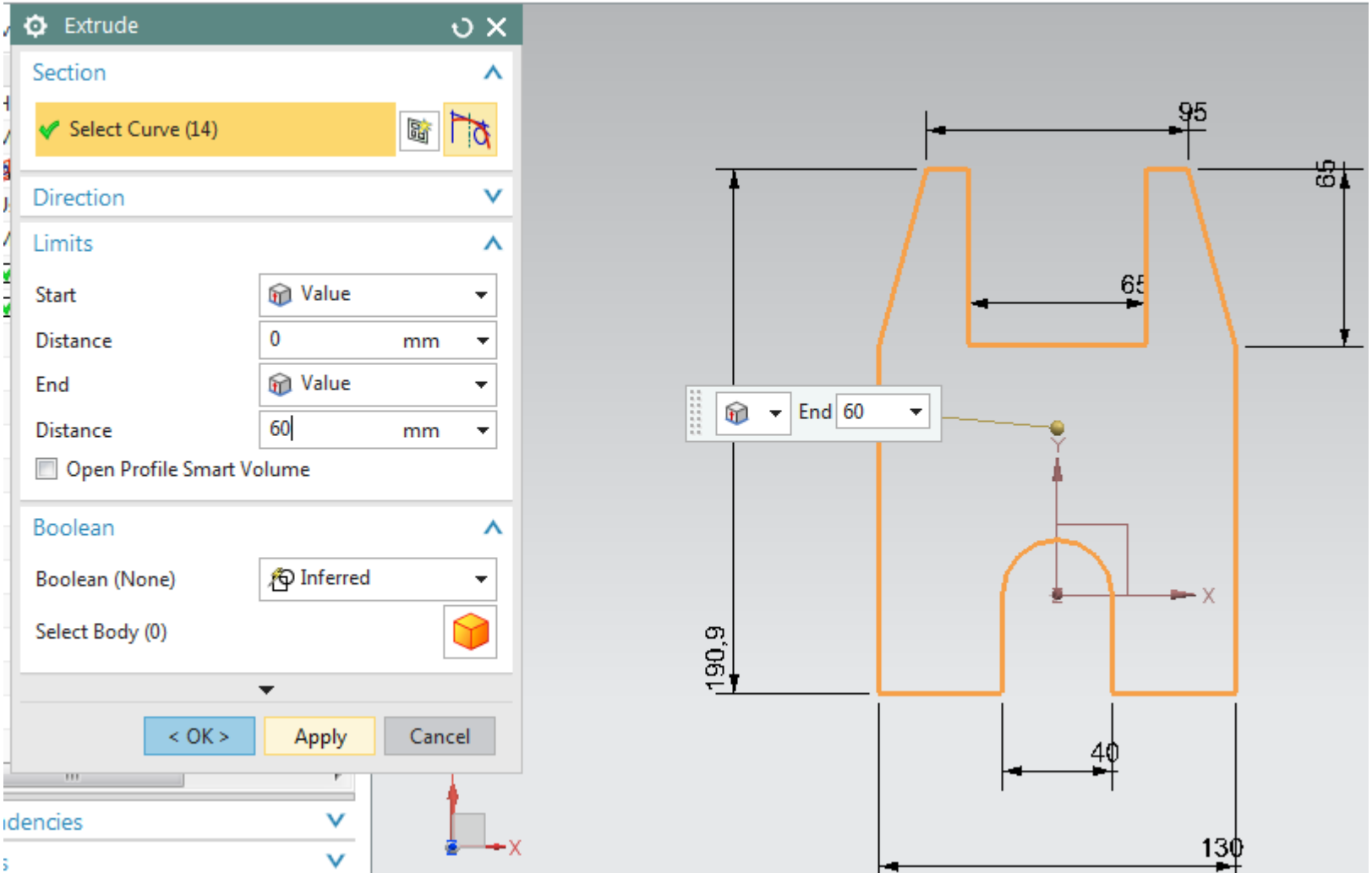
25. Extrude this sketch in the Z-direction by 60 mm



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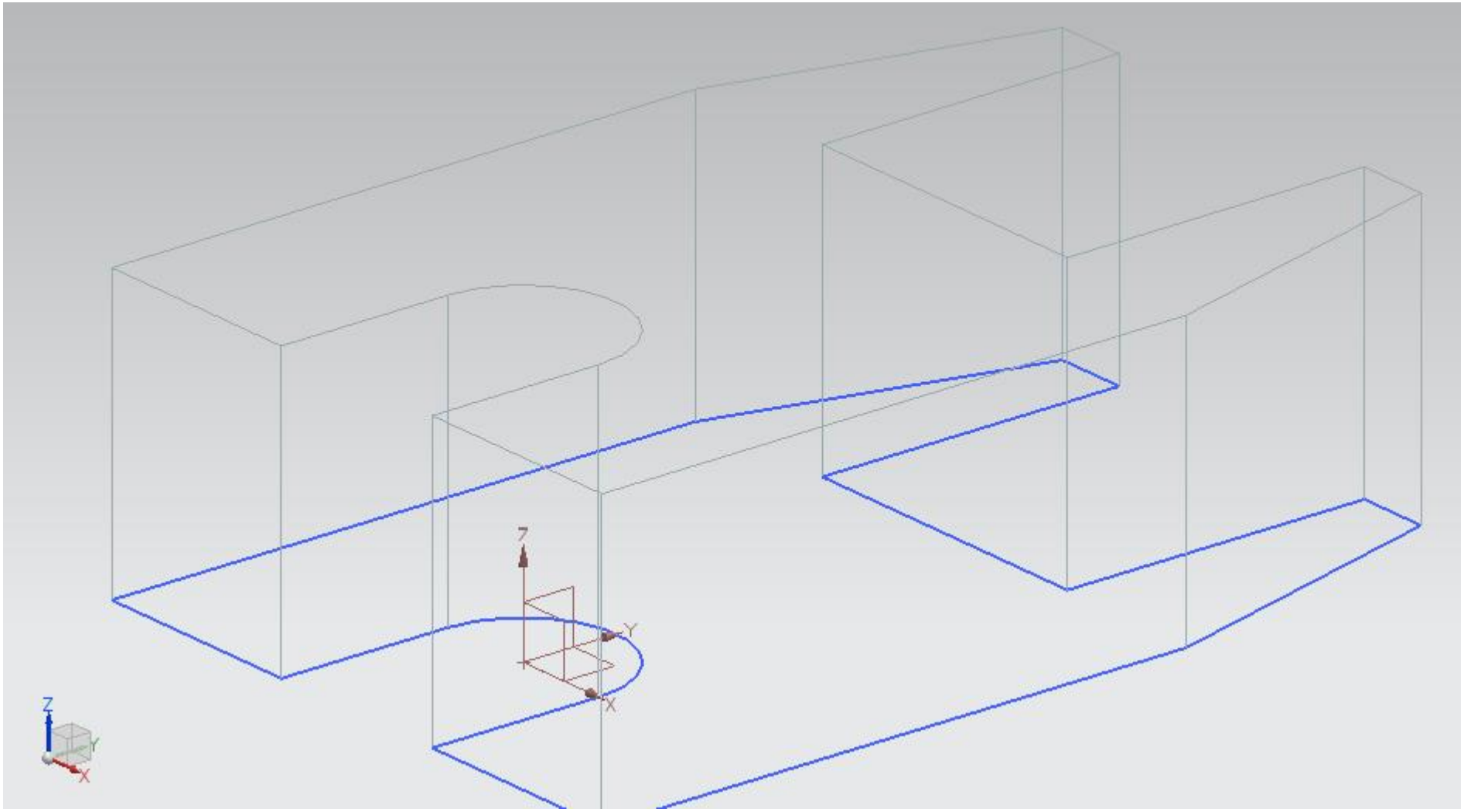

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