COMPUTER AIDED ENGINEERING DESIGN (BFF2612)

LAB. EXERCISE 2 (PATTERN)

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LAB. EXERCISE 2 (PATTERN)

1.Spur Gear

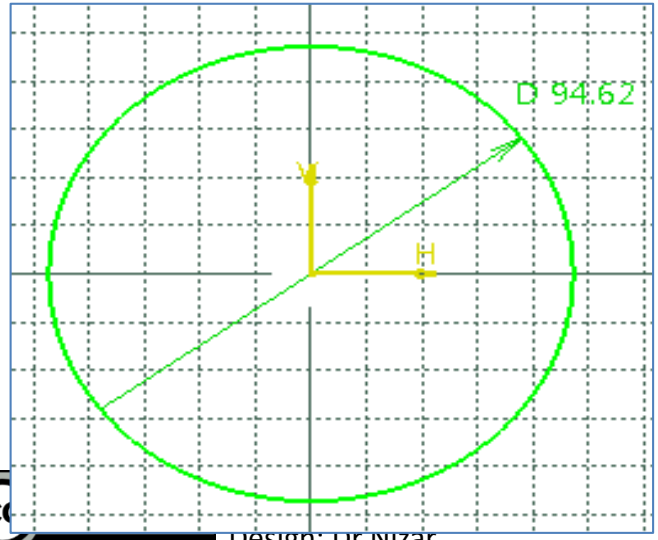
2.Telephone

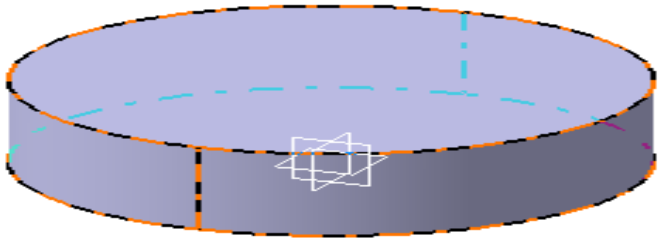
SPUR GEAR

STEP 1

Create the gear root circle

- **Sketch the gear root circle with the diameter of 94.62 mm on the XY plane.**
- **Circle centre should be at (0,0,0)**
- **Extrude the sketch with the thickness of 25 mm.**





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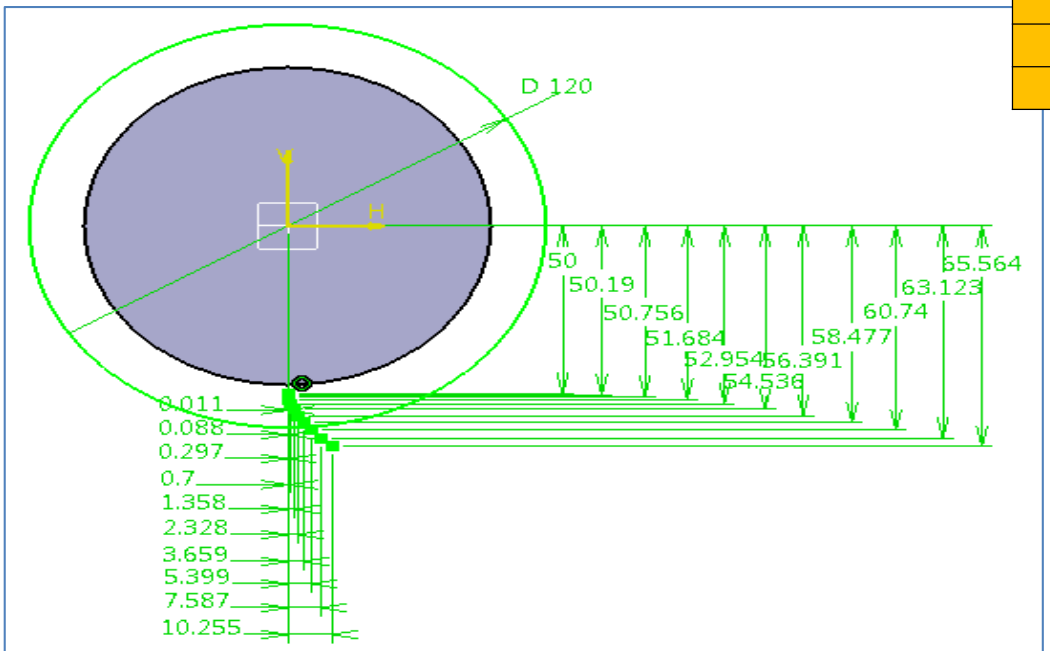
STEP 2

Create the gear tooth

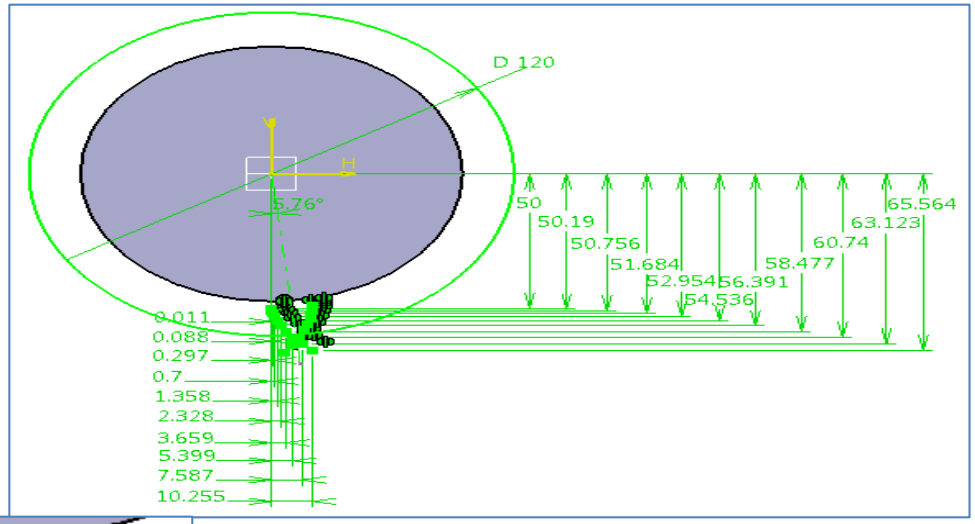
- Select the XY plane.
- Sketch the addendum circle with the diameter of 120 mm.
- Then, create a spline curve through a set of data points beside:

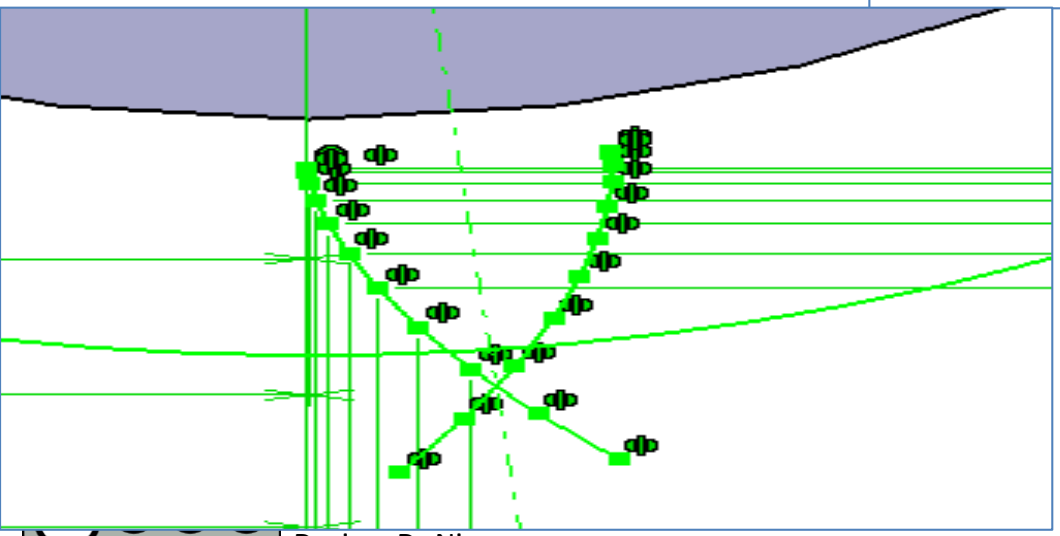
Point	X	Y	Z
1	0	-50.000	0
2	0.011	-50.190	0
3	0.088	-50.756	0
4	0.297	-51.684	0
5	0.700	-52.954	0
6	1.358	-54.536	0
7	2.328	-56.391	0
8	3.659	-58.477	0
9	5.399	-60.740	0
10	7.587	-63.123	0
11	10.255	-65.564	0



STEP 3

Mirror the curve with respect to the reference line (5.76 degree from vertical axis).





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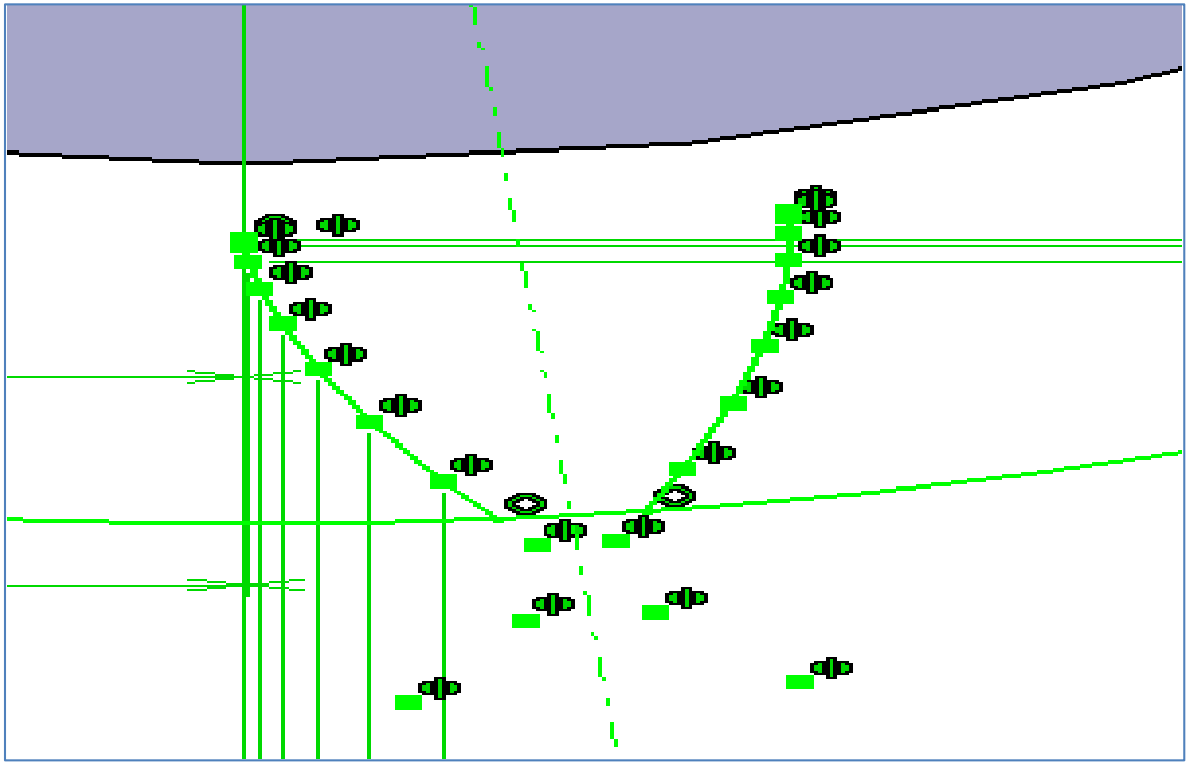
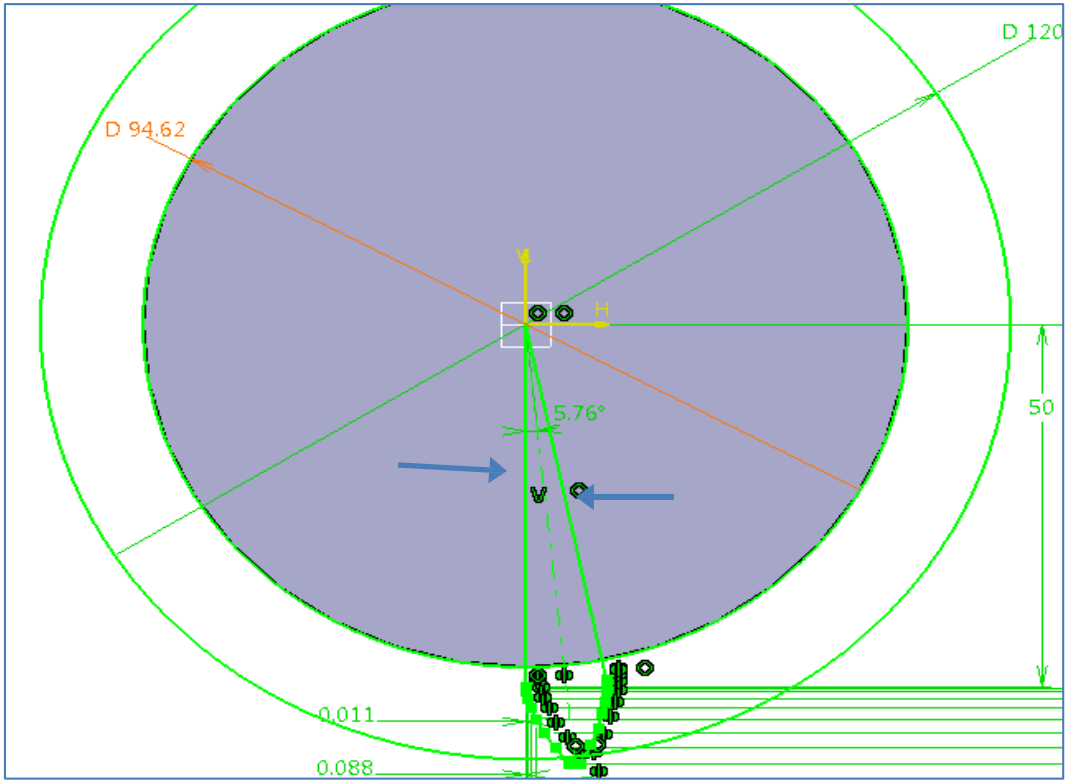
STEP 4

Trim the involute curves to the addendum circle.



STEP 5

- **Sketch the root circle again.**
- **Draw the two radial lines to join the end points of the involute curves with the origin.**



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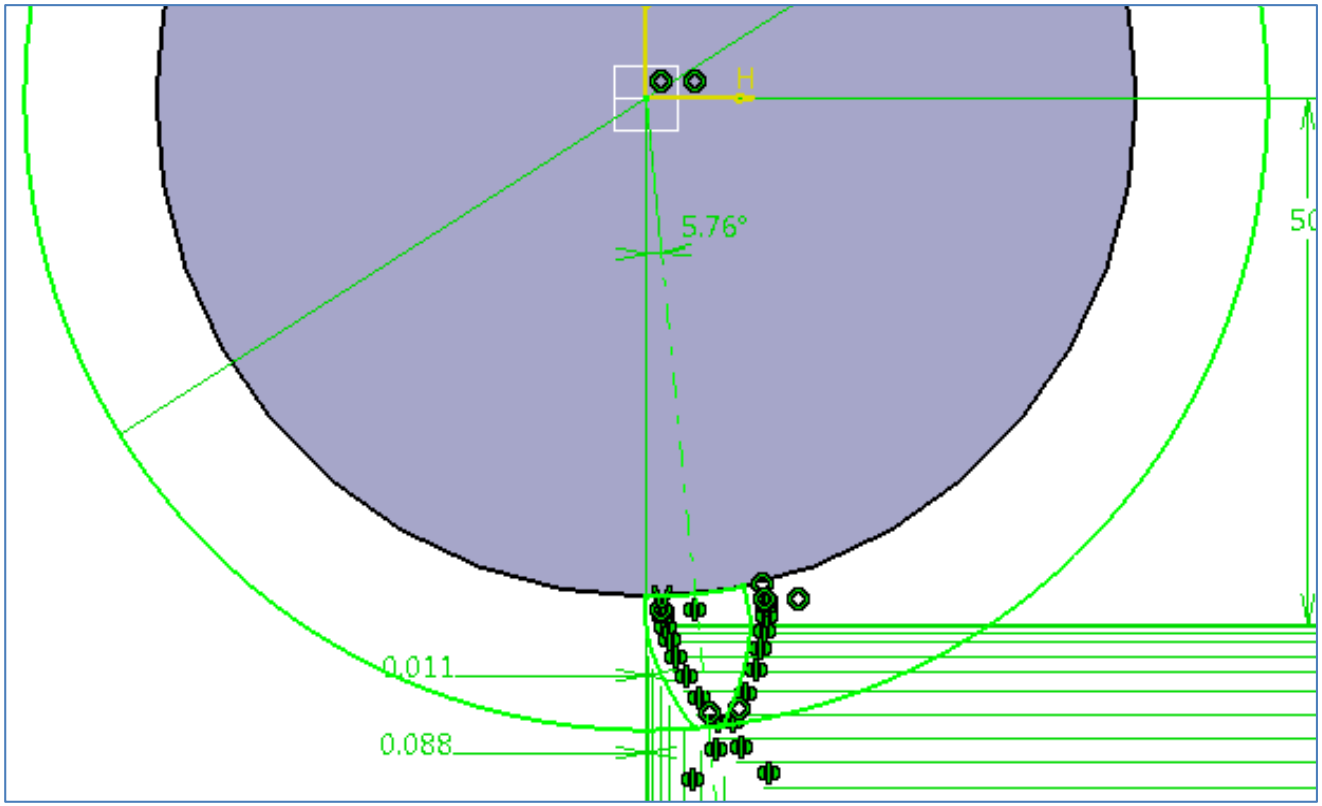
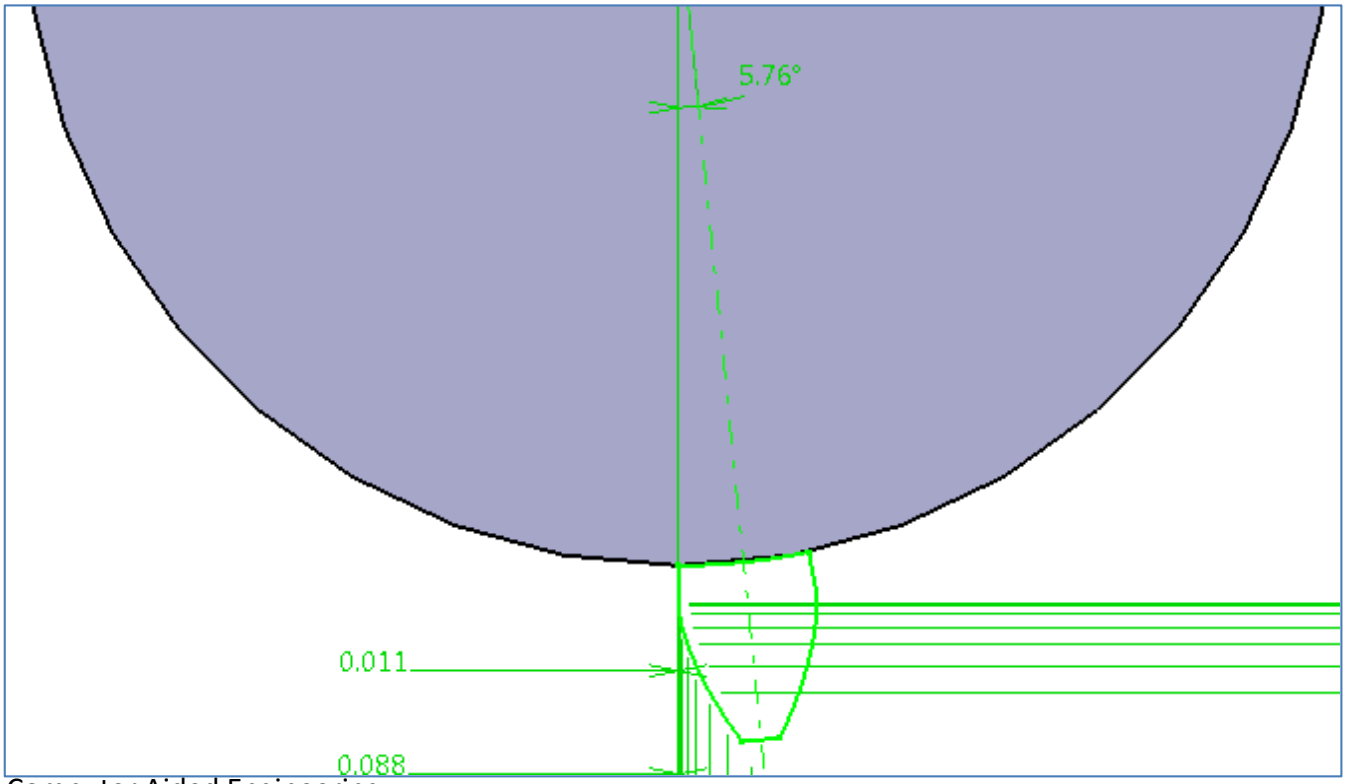
STEP 6

- Trim the radial lines to obtain the profile shown below.
- Trim the root circle to the involute curve as well.



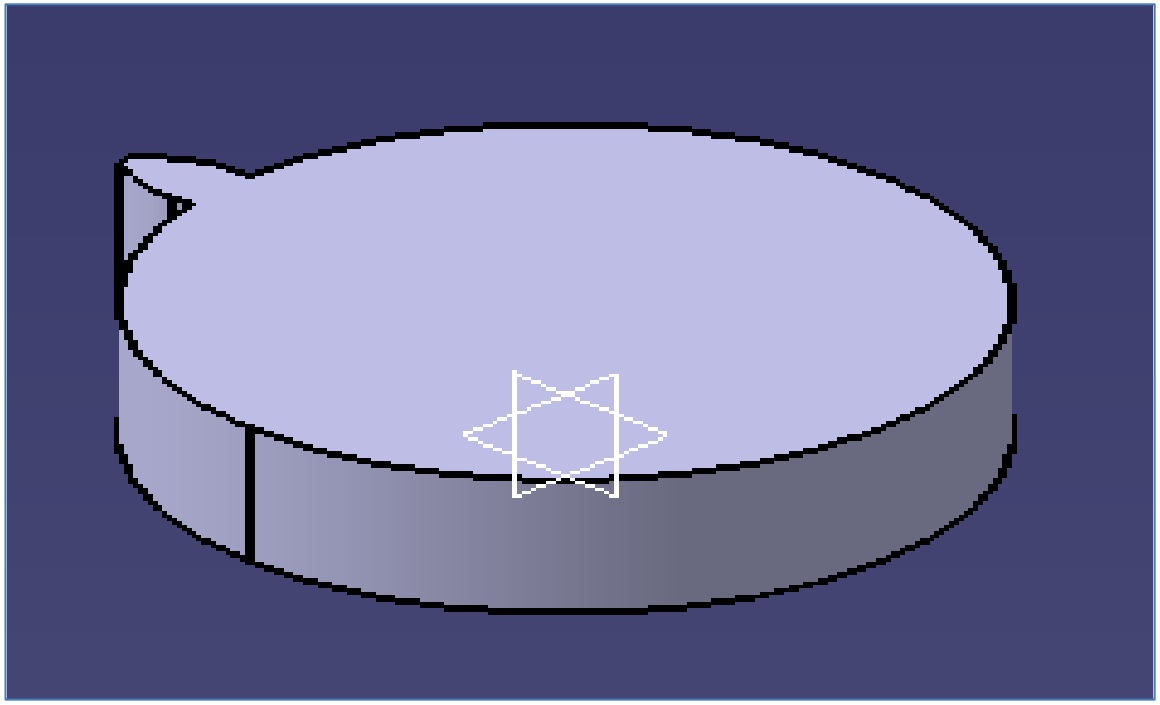
STEP 7

Trim the addendum circle to obtain the tooth profile.



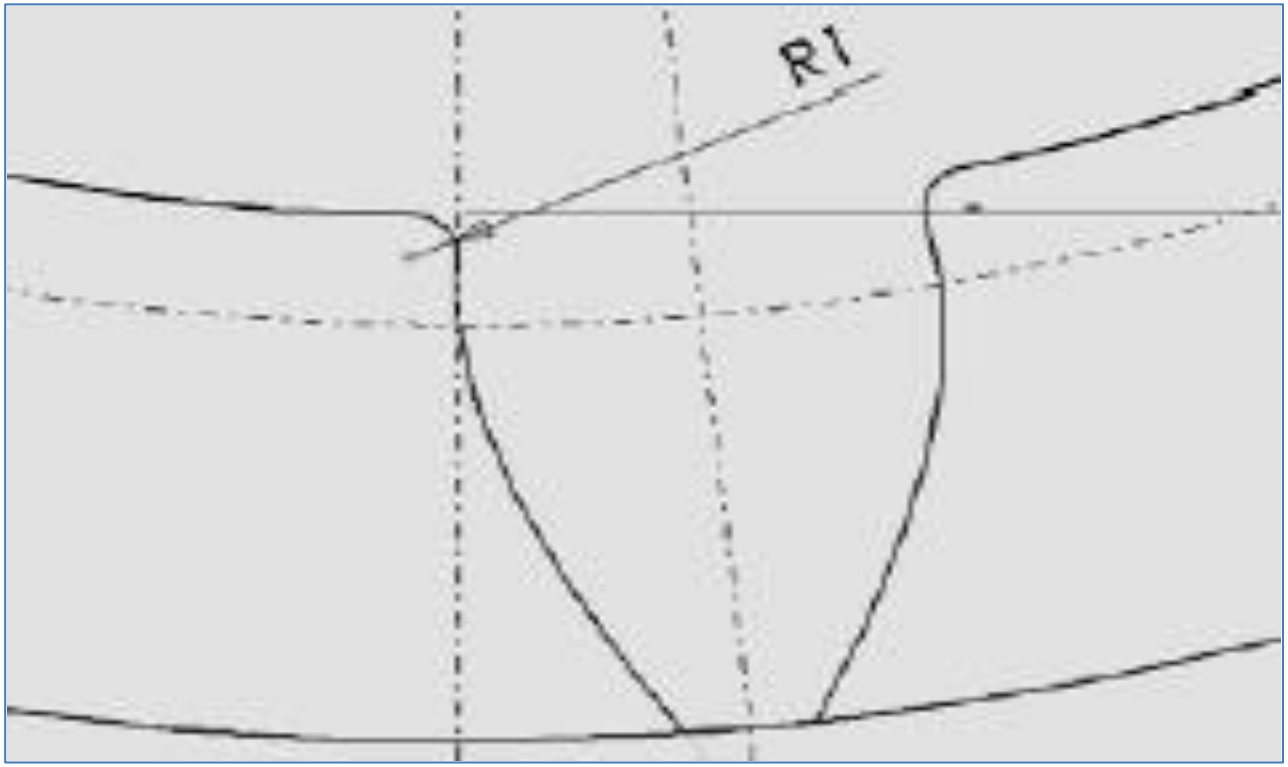
STEP 8

Extrude the tooth profile with the thickness of 25 mm.



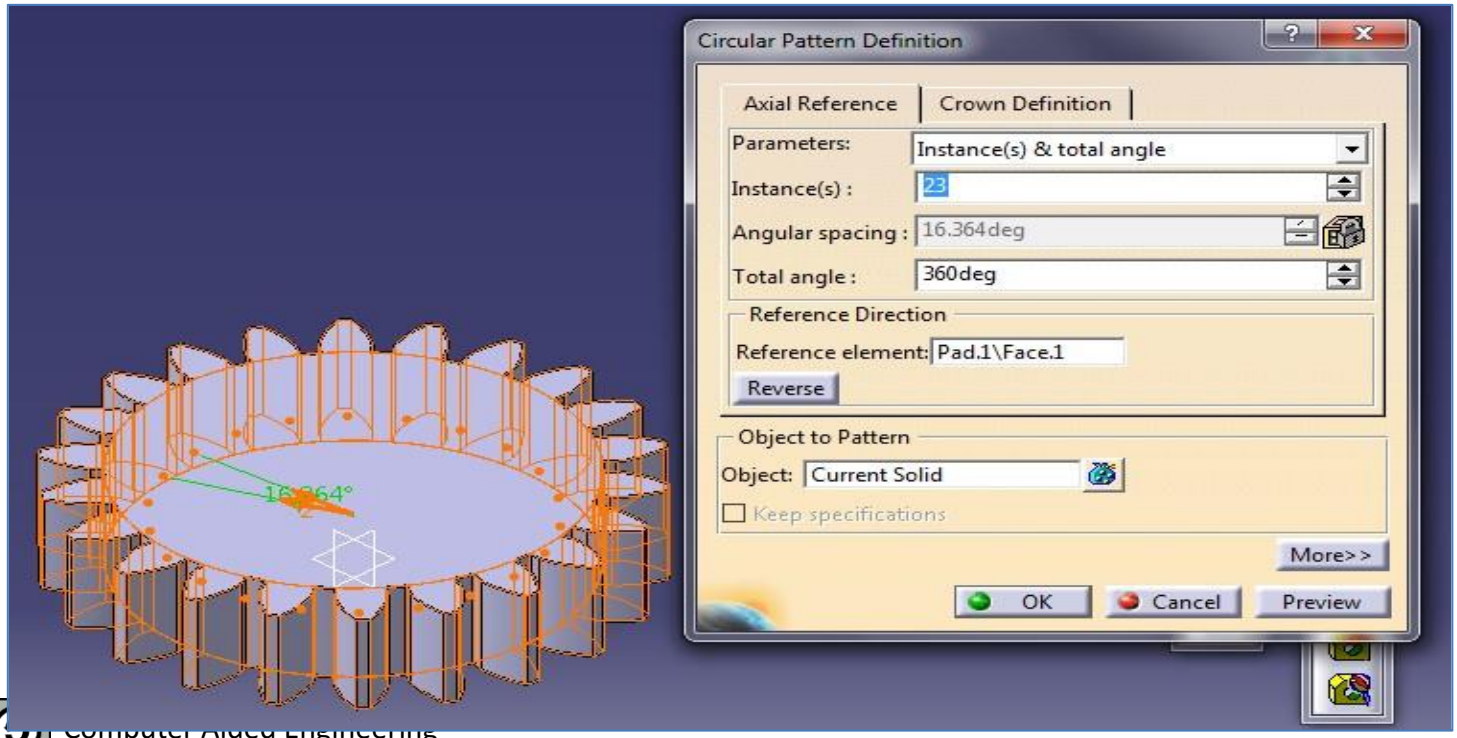
STEP 9

Fillet the corners of every tooth shoulder with the fillet radius of 1 mm.



STEP 10

- **Create the circular array of the tooth.**
- **Using the circular pattern option, array the tooth profile with the number of teeth as 23 and total angle as 360^0.**

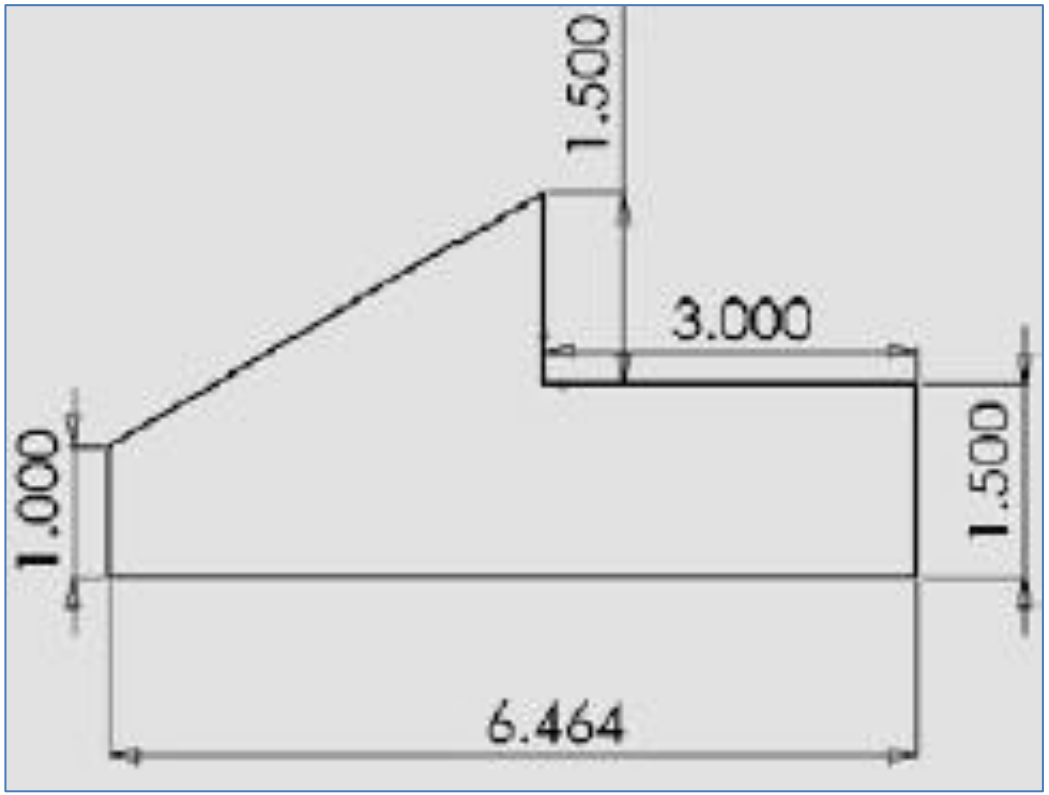


TELEPHONE

STEP 1

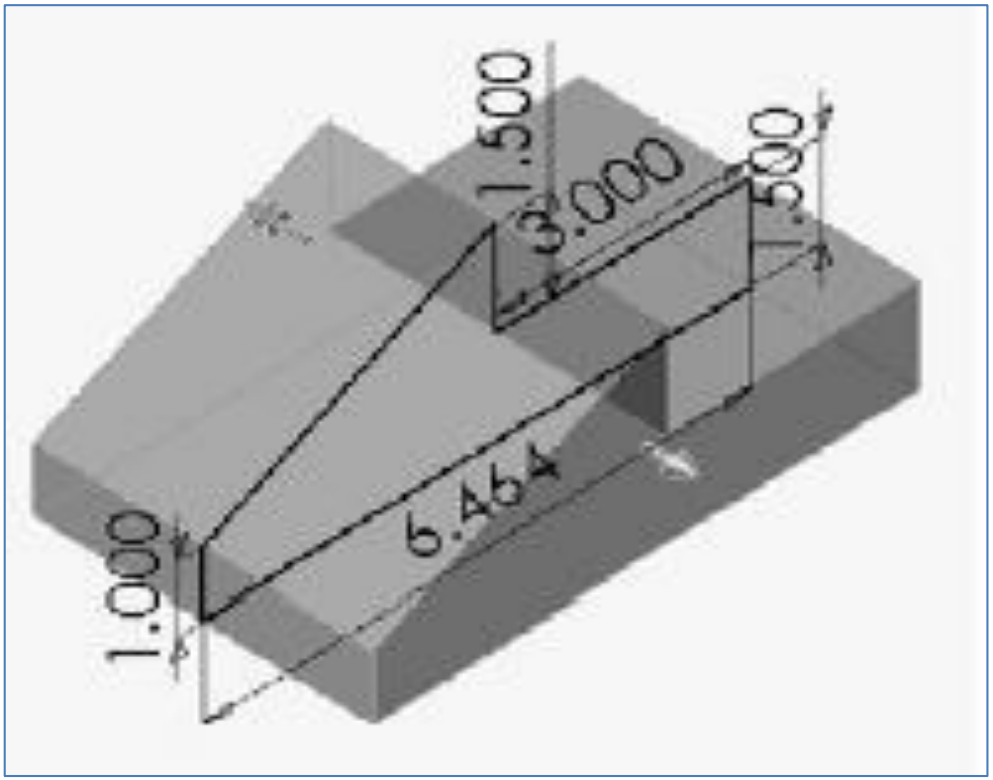
Select the ZX plane and sketch the following profile:

Unit in inch.



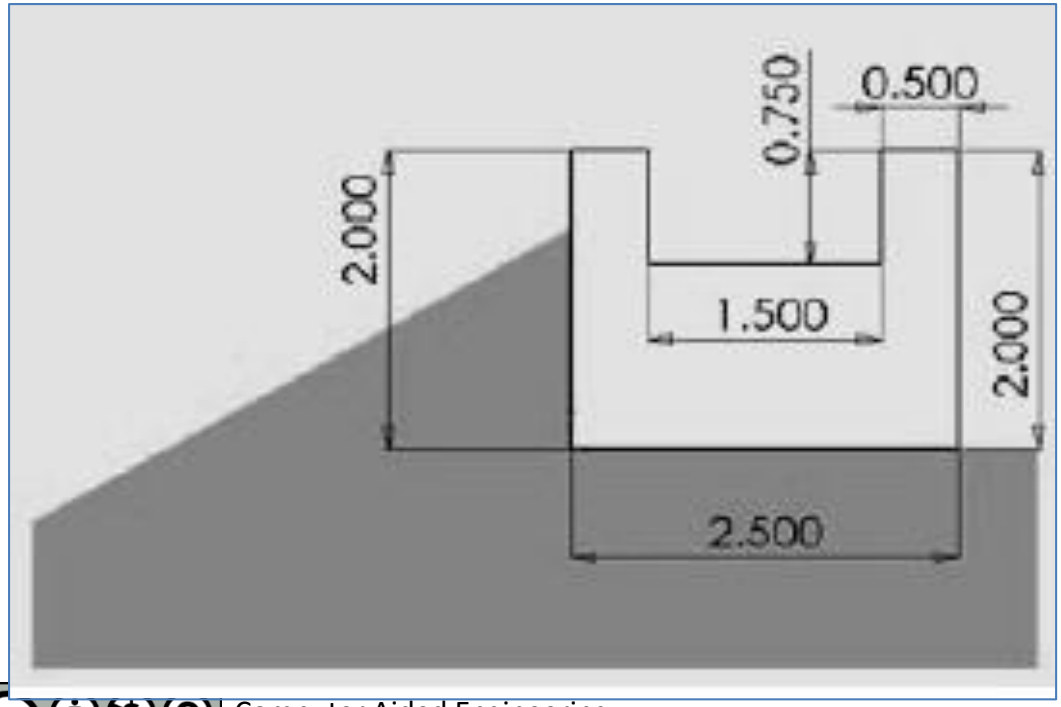
STEP 2

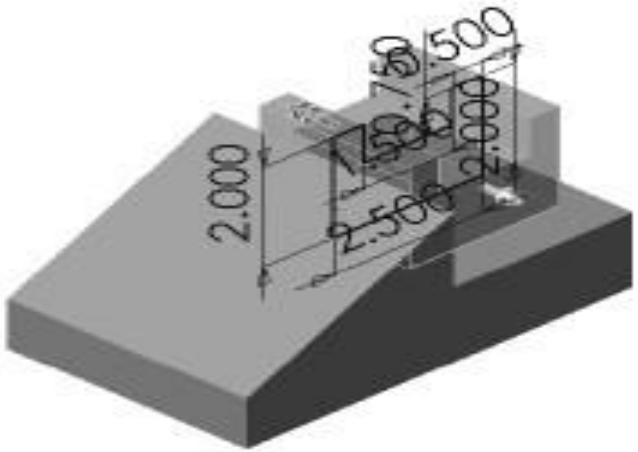
Extrude the profile with the distance of 2.00 inch on both directions.



STEP 3

- Select the ZX plane and sketch the following profile.
- Extrude the profile with the distance of 1.250 inch on both directions.

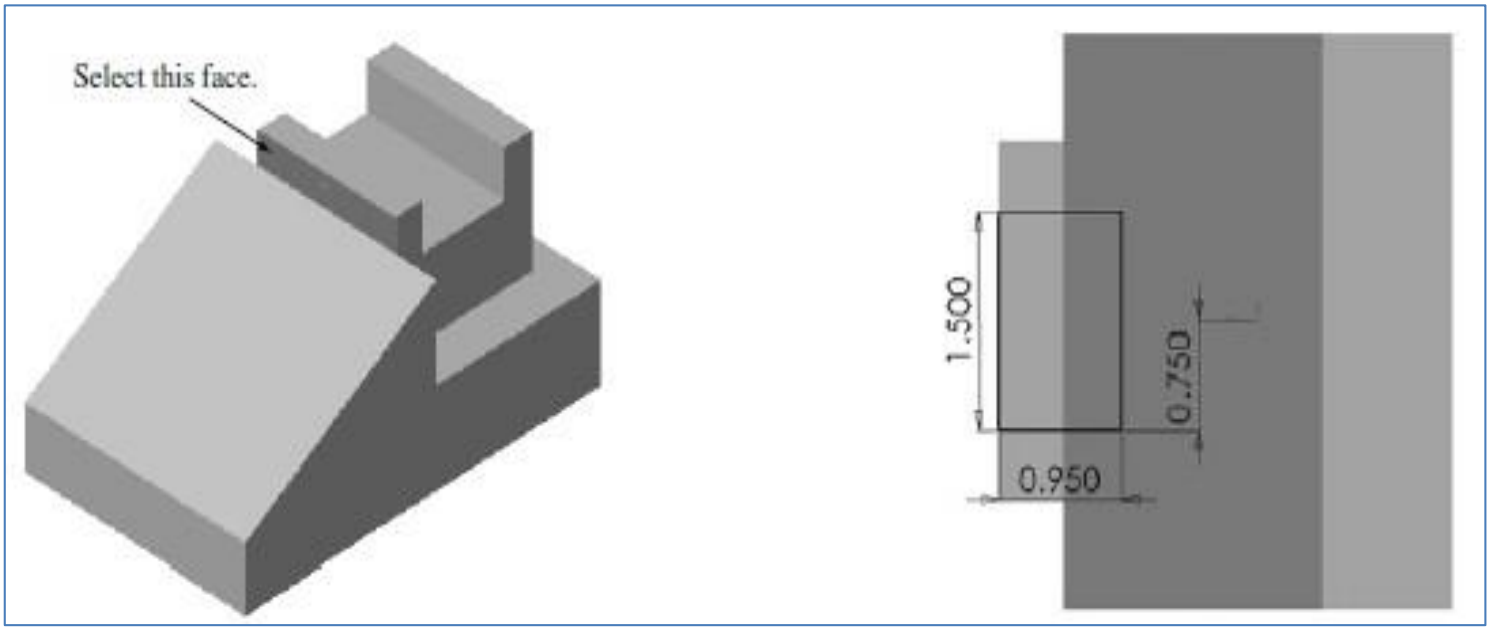




STEP 4

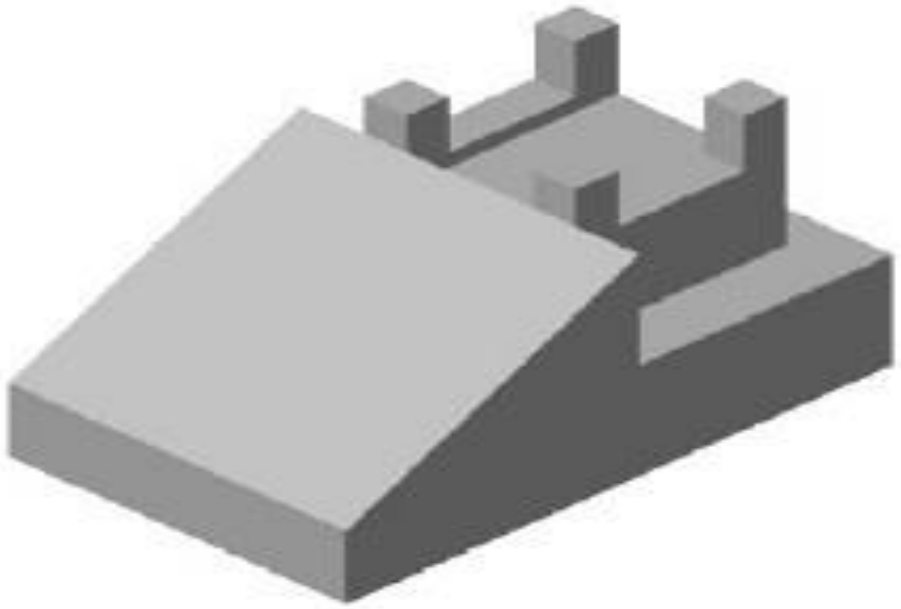
Create the cut in the receiver holder.

- **Select the face of the receiver holder shown in the image on the left below as the sketch plane and draw a rectangle as in the image on the right below.**



STEP 5

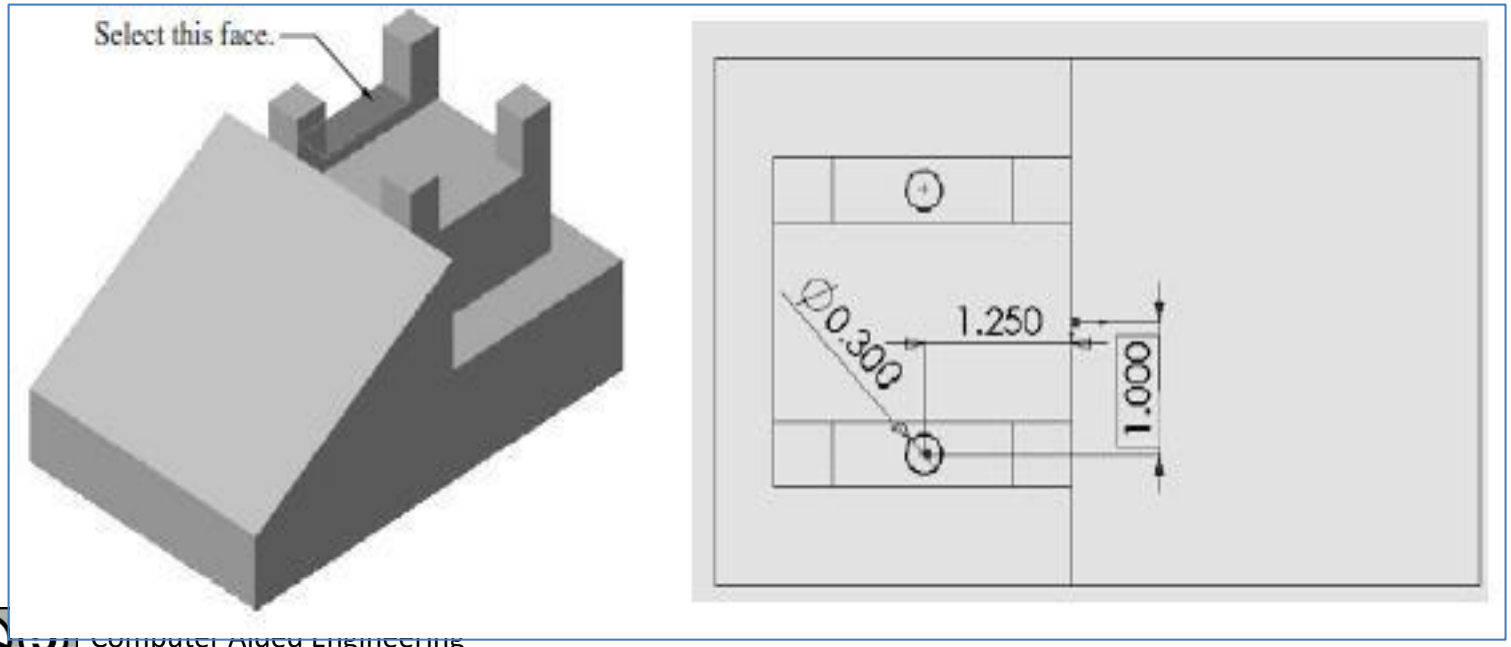
Create a pocket on the receiver holder by using the rectangle sketch to obtain the model as in the image on the right below:



STEP 6

Create the disconnector

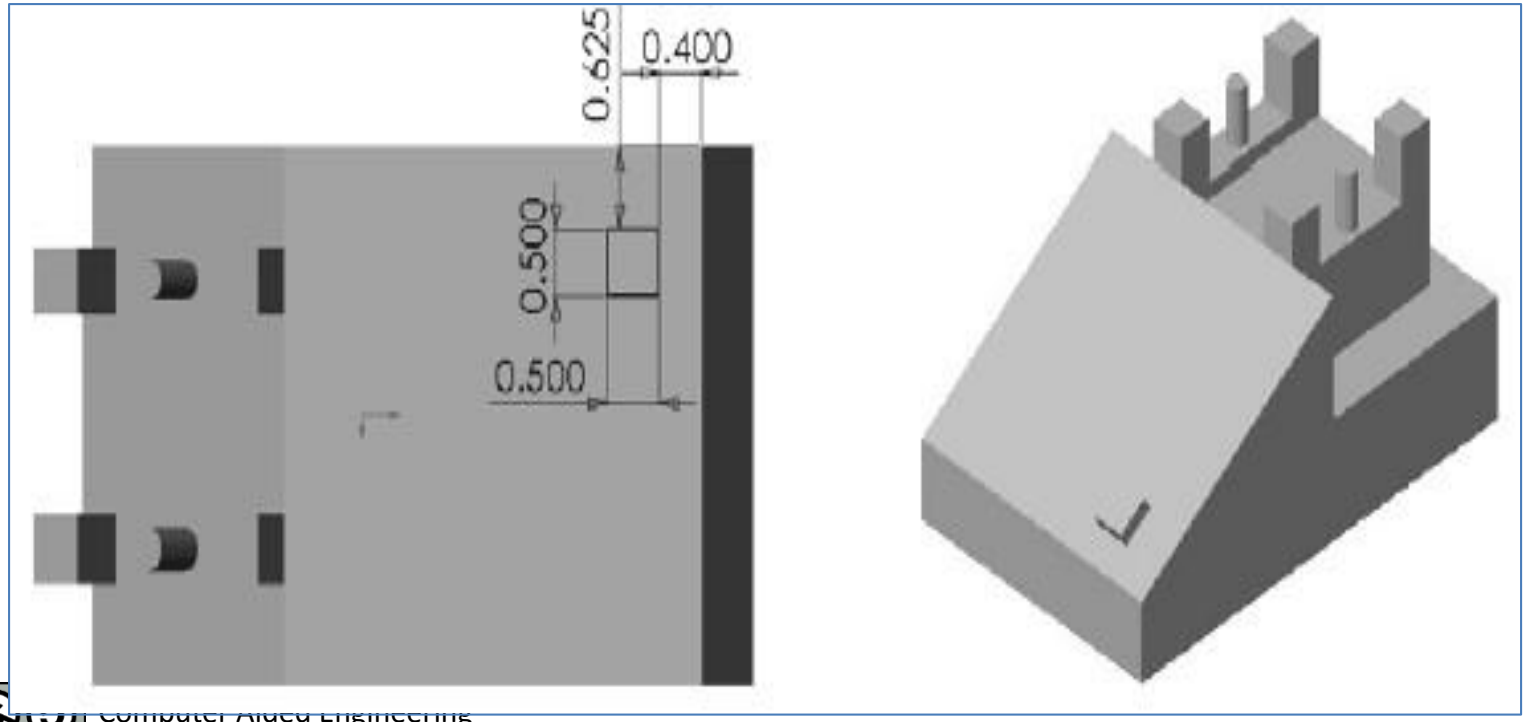
- **Select the face shown in the image below as the sketch plane and sketch the two circles as shown below.**
- **Extrude these circles to the height of 0.7 inches.**



STEP 7

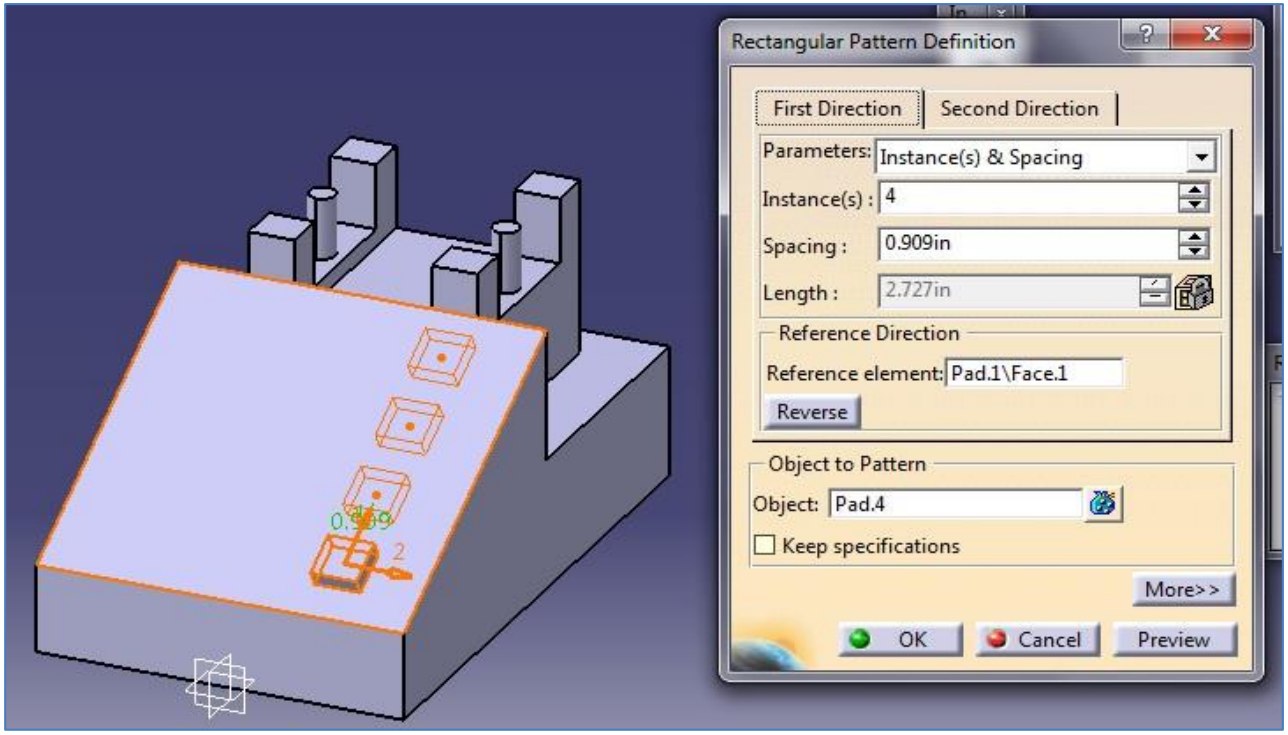
Create the buttons

- **Select the inclined plane of the model as the sketch plane and sketch the square as shown in the image below:**



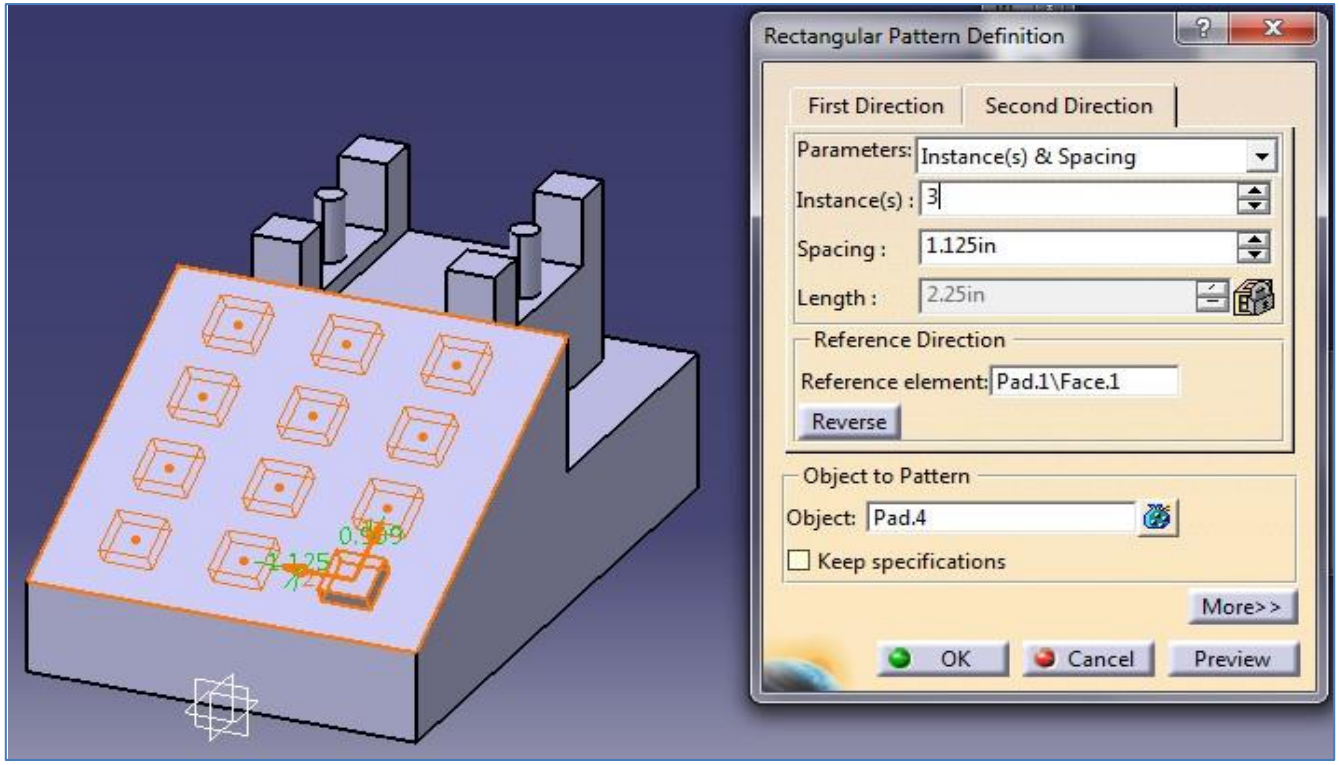
STEP 8

Select the rectangular pattern and set the parameter as in the image below:



STEP 9

Select the rectangular pattern and set the parameter as in the image below:



STEP 10

Fillet all the edges with the fillet radius 0.100 inch.

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