Bicycle Wheel Construction

Introduction

Here is a simple tutorial that shows one method of constructing a bicycle wheel. Comments and suggestions are most welcome, either by email or by posting on the TurboCAD User Forum. If you have problems with the tutorial or have questions about it, please post them on the forum so that other users can benefit by the ensuing conversation.

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Drawing used to create images

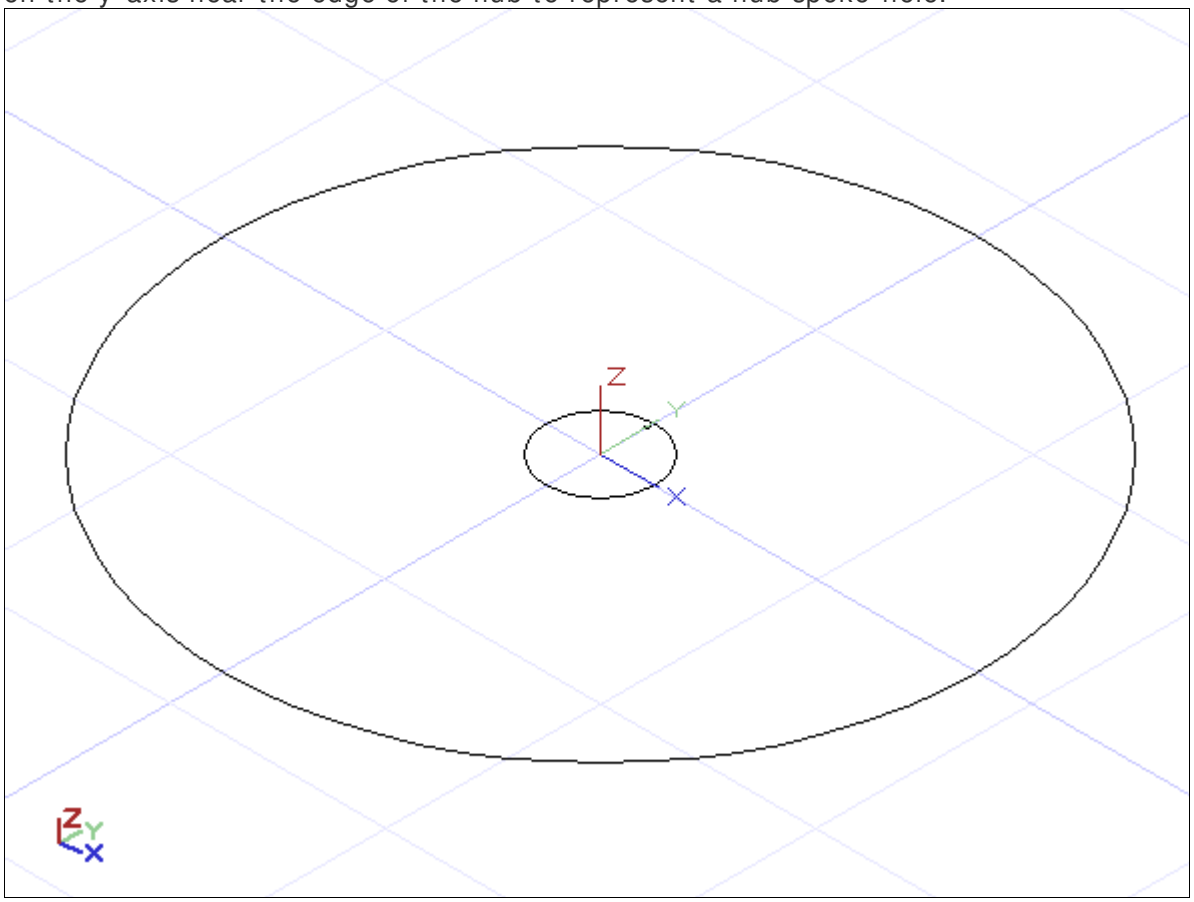
Tools used in this exercise

This tutorial uses only five tools: the Circle Center and Point tool, the Point tool, the Radial Copy tool, the Linear Copy tool, and the 3D Polyline tool.

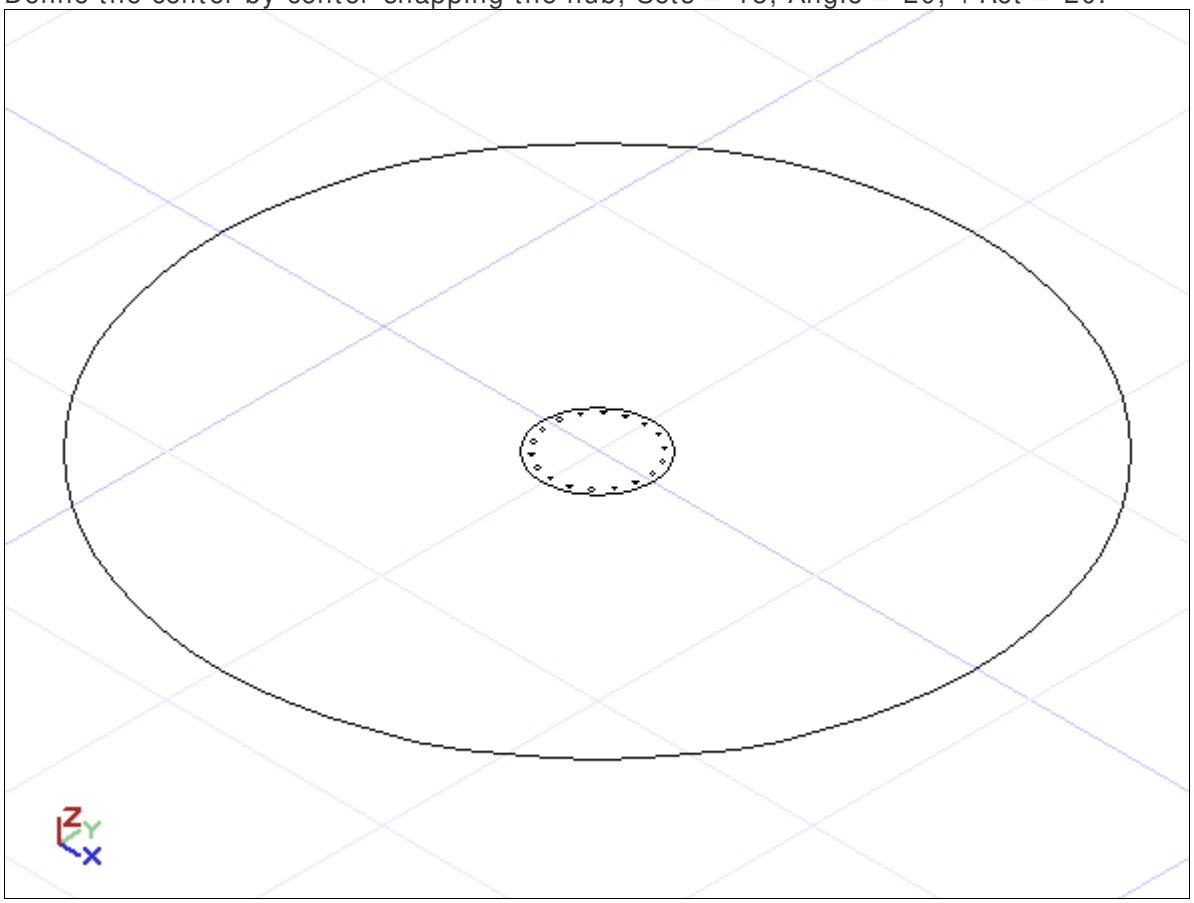
Step-by-step

Preparation: setup the Point tool so that it uses the circle variant with a 0.5" diameter.

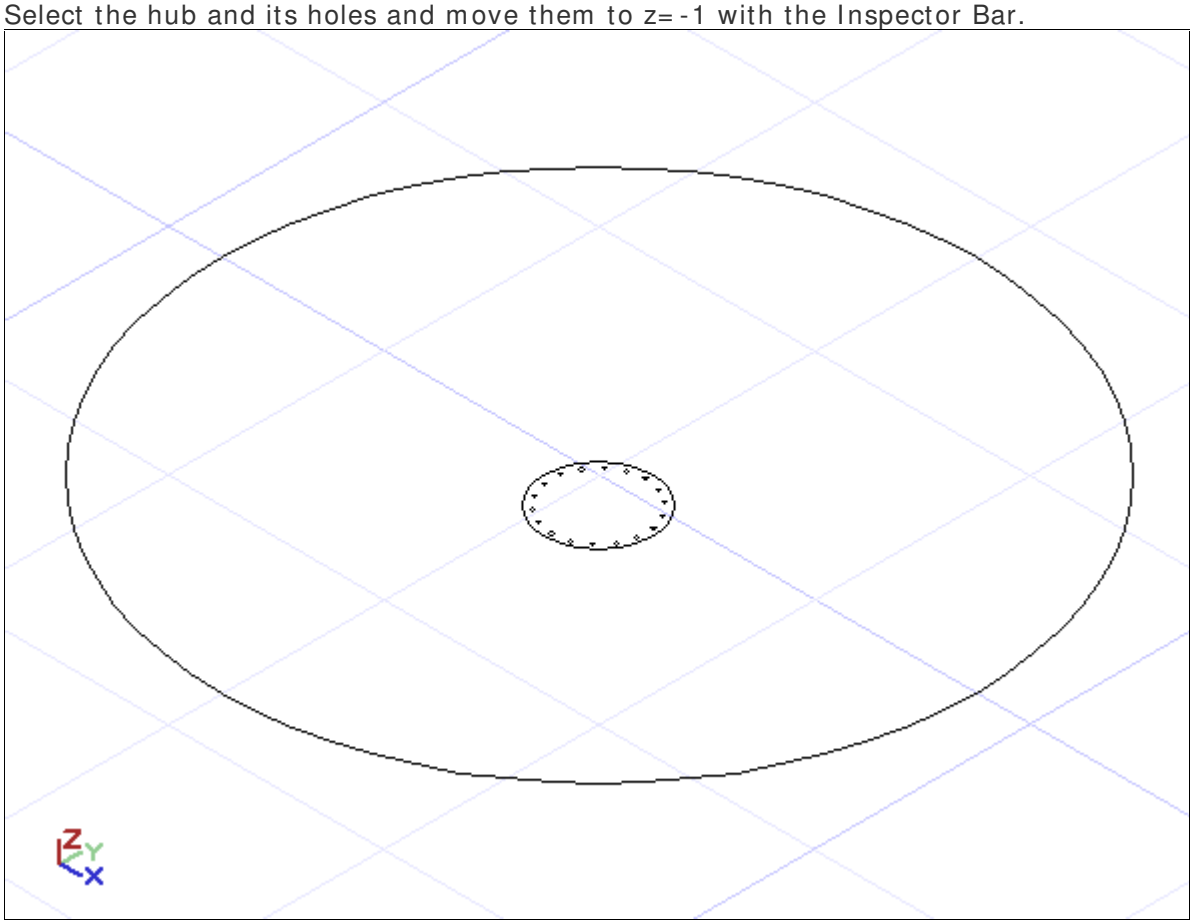
1. Using an ISO-SE view, begin by drawing a 14" radius circle at the origin to represent the wheel rim, a 1" radius circle at the origin to represent one end of the hub, and a small circle on the y-axis near the edge of the hub to represent a hub spoke-hole.



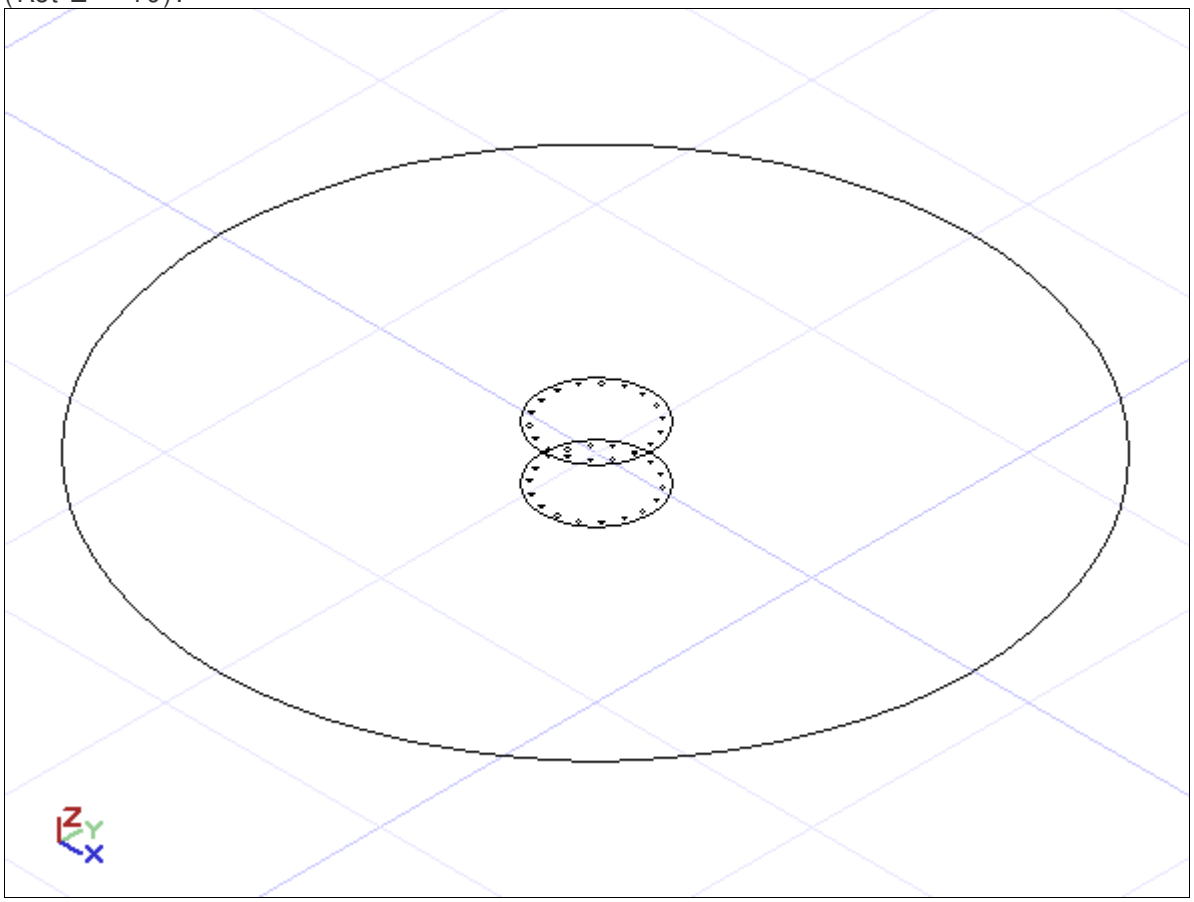
2. Complete the end of the hub by radial copying the small hole about the hub center. Define the center by center-snapping the hub, Sets = 18, Angle = 20, +Rot = 20.



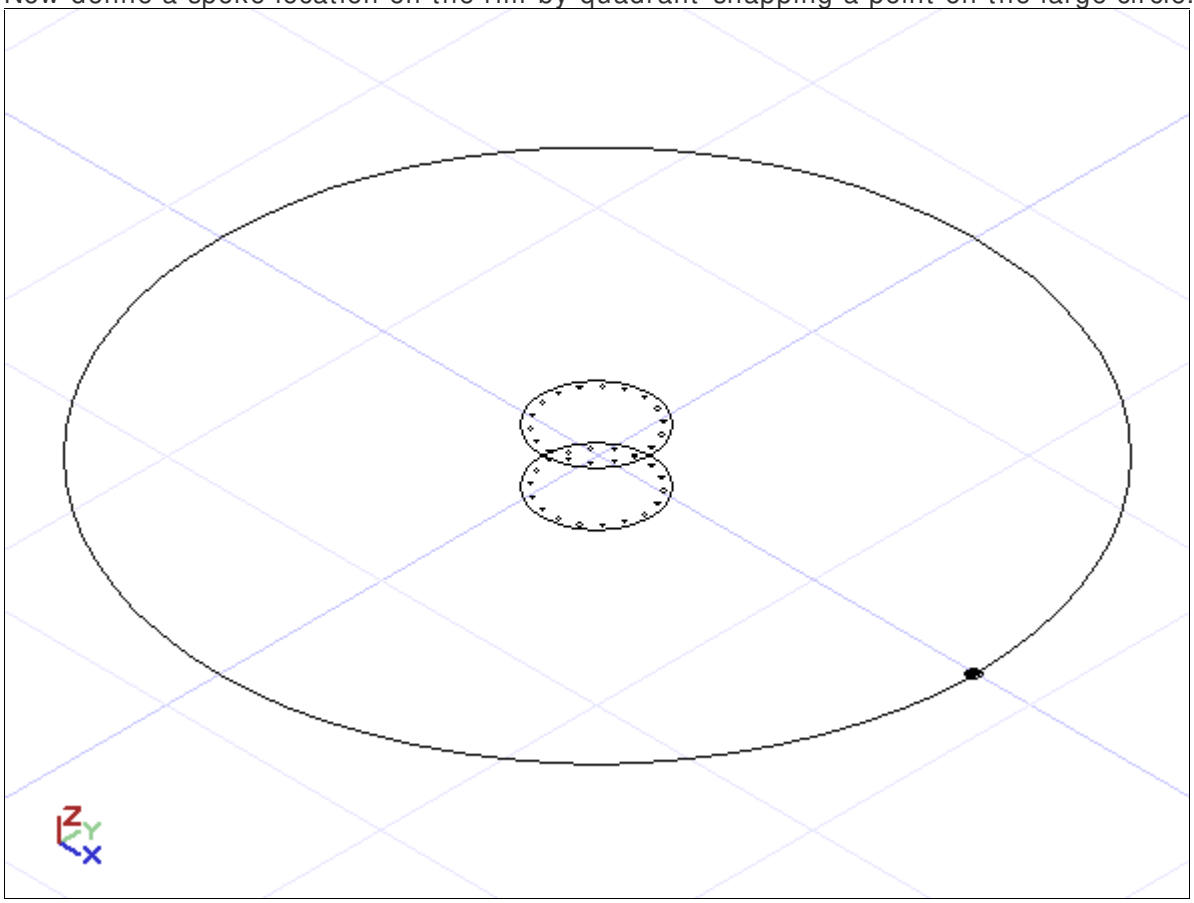
3. Select the hub and its holes and move them to z=-1 with the Inspector Bar.



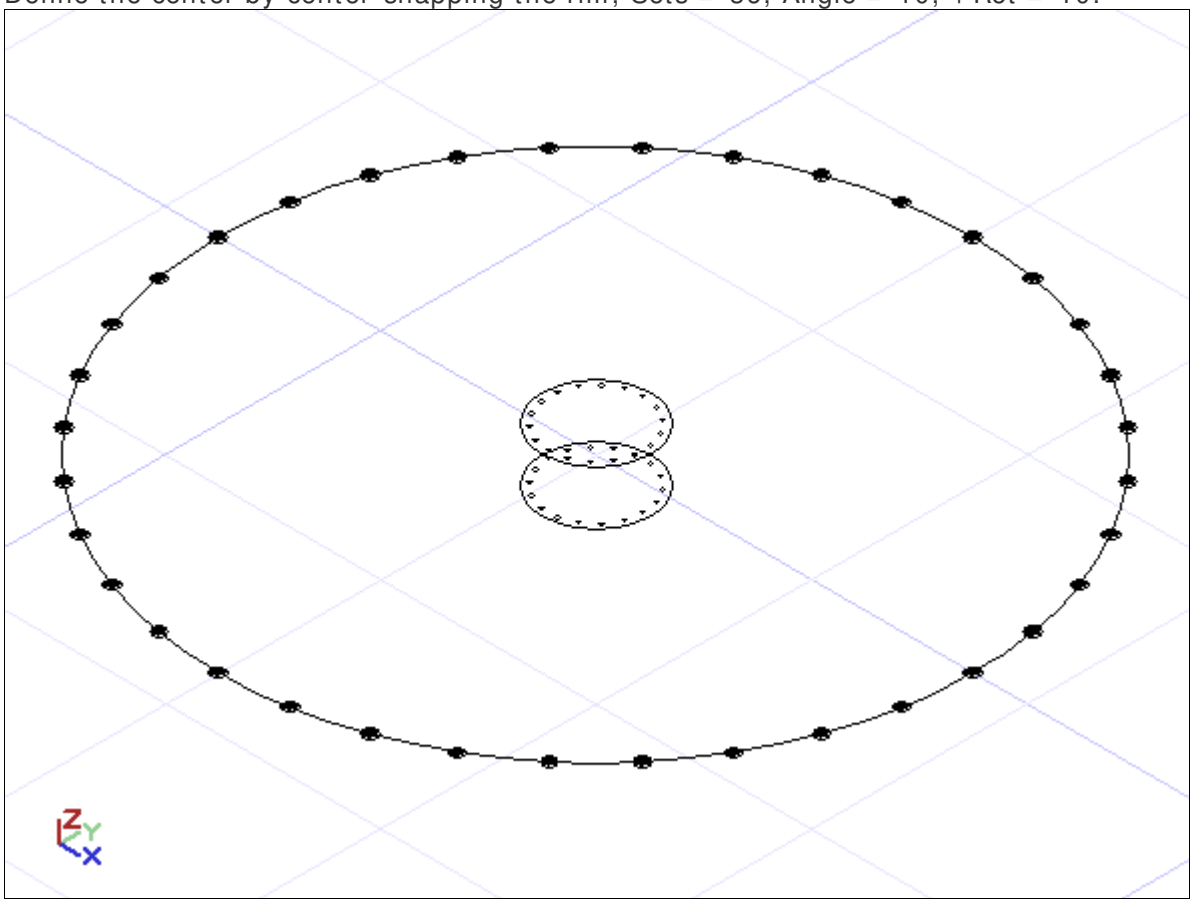
4. To create the other end of the hub, linear copy the hub end to Z = 2.
   (X-step = 0, Y-step = 0, Z-step = 2, and Sets = 2).
   While the lower hub is still selected, rotate it 10° with the Inspector Bar.
   (Rot Z = 10).



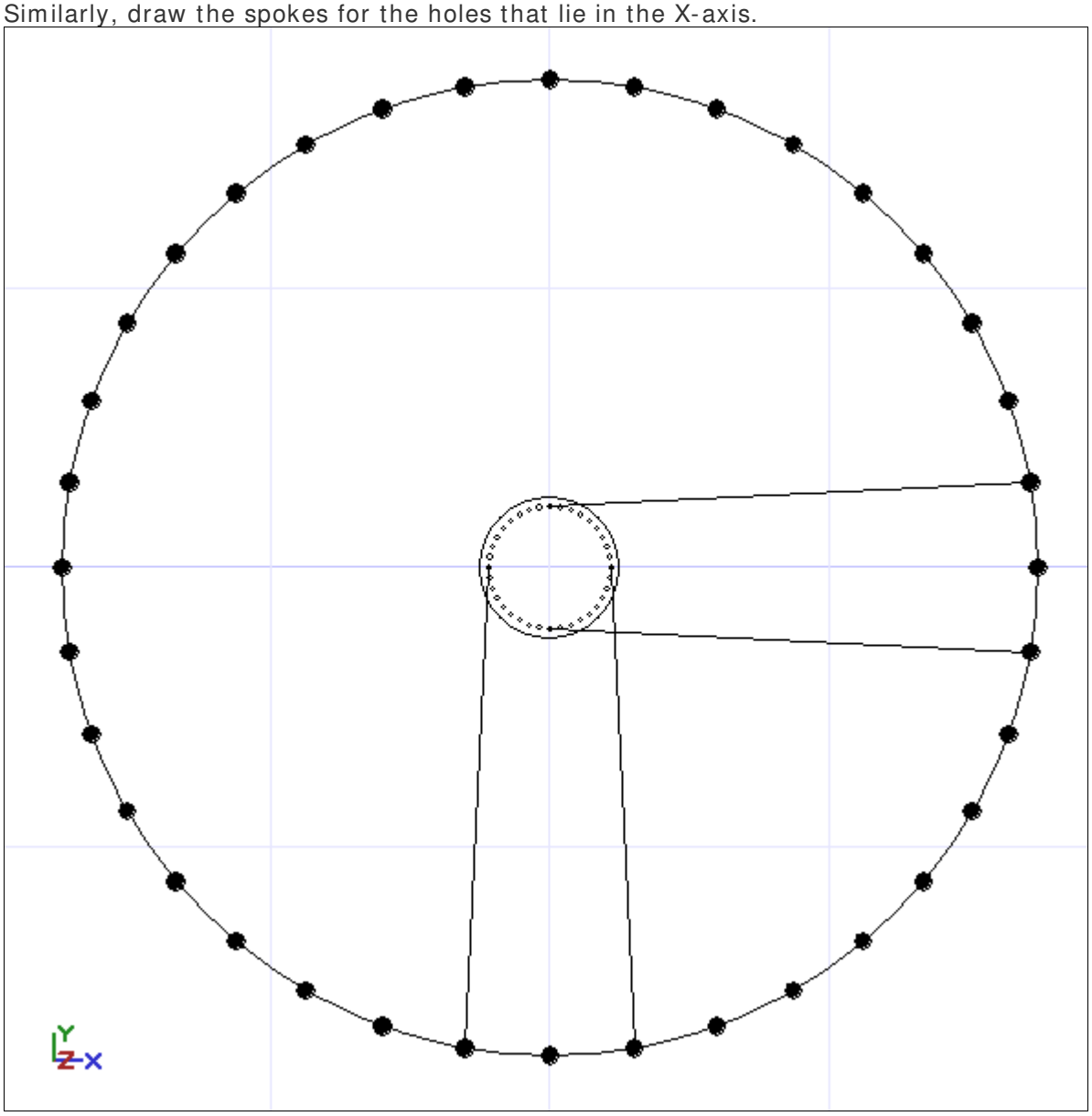
5. Now define a spoke location on the rim by quadrant-snapping a point on the large circle.



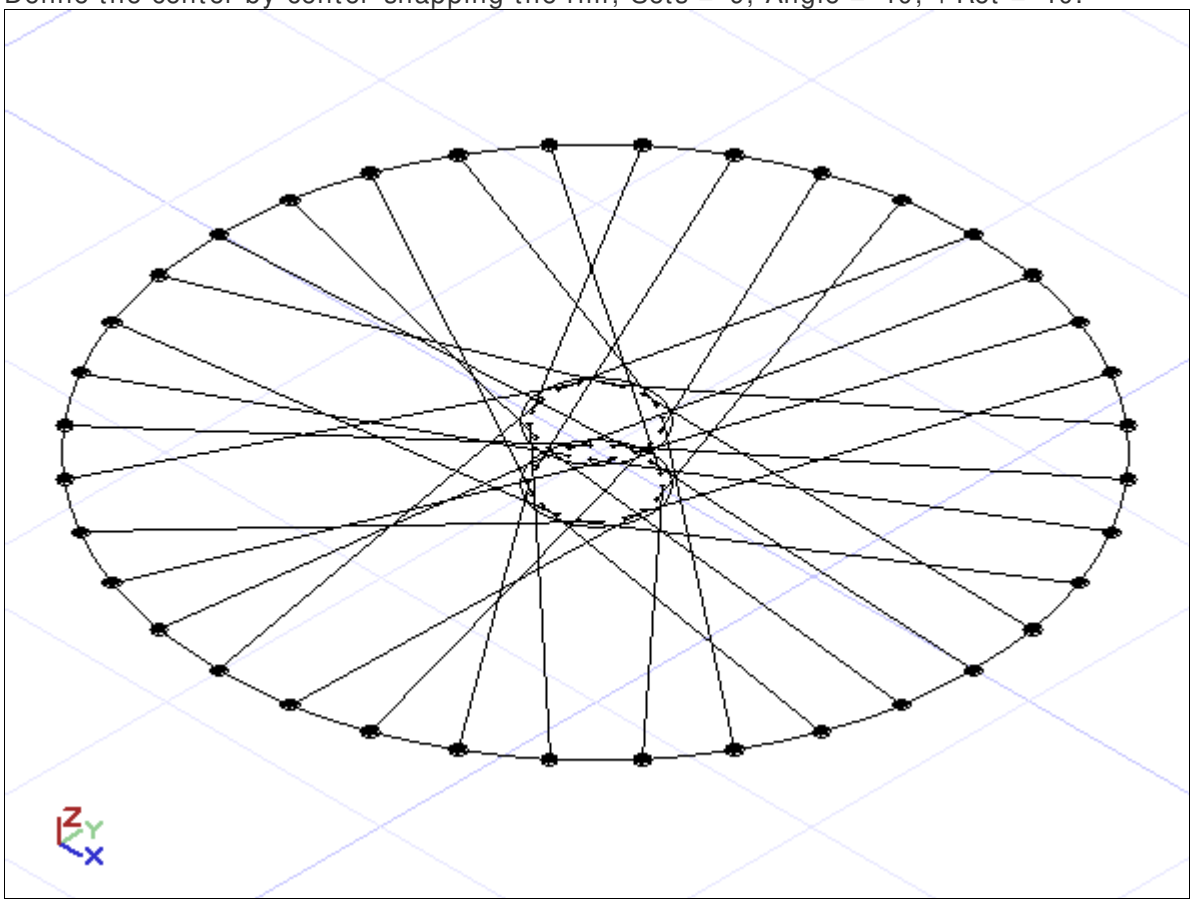
6. Finish the rim by radial copying the point you just drew.
   Define the center by center-snapping the rim, Sets = 36, Angle = 10, +Rot = 10.



7. Using a top view, draw four spokes.
   Start by snapping a 3D Polyline to the center of the upper hub spoke-hole that lies on the Y-axis and the point on the rim shown in the image below.
   Repeat for the other hole that lies on the Y-axis.
   Similarly, draw the spokes for the holes that lie in the X-axis.



8. Finally, using an ISO-SE view, select the four spokes and radial copy them.
   Define the center by center-snapping the rim, Sets = 9, Angle = 40, +Rot = 40.



Revisions:

12/21/02

Original post.

1/4/03

Added missing instruction in step 4. Thank you user, Terry Floyd.

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