
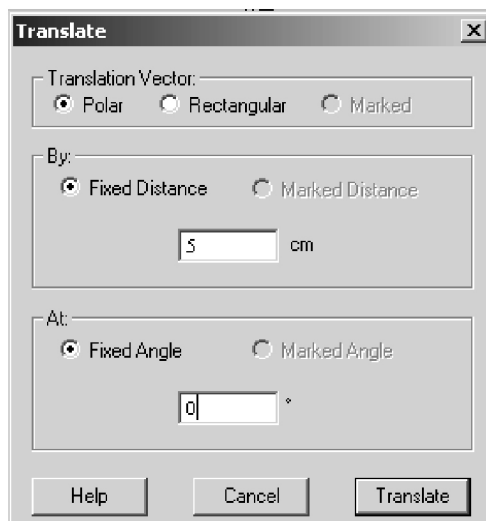




How to Do Page 99 #30 Using *The Geometer's Sketchpad*®

1. Create a circle with a radius of 5 cm.
 - Click Graph and then select Show Grid.
 - Using the selection tool, , highlight the point at the origin.
 - Click on Transform and select Translate.
 - Set the fixed distance to 5 cm and the fixed angle to 0°. Then, press enter (or click on Translate). See Figure 1.

**Figure 1**

- Click on the selection tool and then click on the background, to make sure that no objects are currently selected.
 - Click the point at the origin O. Next, click on the point 5 cm from the origin.
 - Click Construct and select Circle By Centre + Point.
2. Create a point A on the circle and a radius OA.
 - Click on the point tool  and place a point anywhere along the circle.
 - Click on the text tool, . Double-click on point at the origin and label the point O.
 - Label the point on the circle as A.
 - Using the selection tool, select points O and A.



- Click Construct and select segment.
- Click on Measure. Select length. The segment should be highlighted.
- Click on the text tool. Double-click on the measured length, which should be 5 cm. Change the label to r. See Figure 2.
- If you click the selection tool, you can select the measured length and move it to your preferred location on the screen.

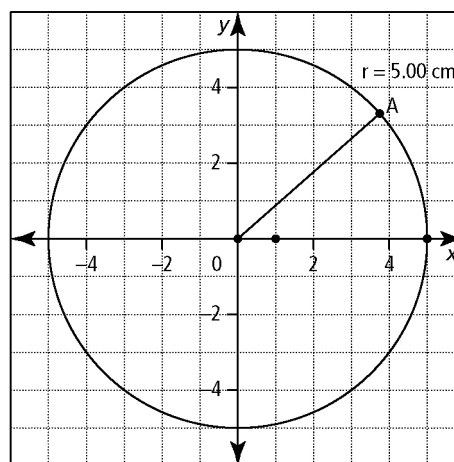


Figure 2

- Record the coordinates of point A.
 - Using the selection tool, select point A.
 - Click on Measure; select Abscissa (x).
 - Select point A. Click on Measure and select Ordinate (y).
 - Measure trigonometric ratios.
 - Click on each of the three measured values: r, X_A , and Y_A .
 - Click Measure; select Calculate.
 - Click on Values and choose Y_A .
 - Click on \div . Then, click on Values and choose r and then press enter.
 - Similarly, calculate the ratios X_A / r and Y_A / X_A .
 - Click on the text tool **A** and double-click on the ratio Y_A / r . Change the label to sin A.
 - Similarly change the labels for the other ratios to cos A and tan A.
- See Figure 3.

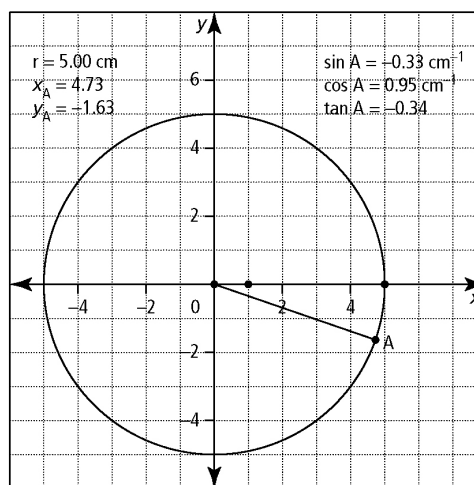


Figure 3



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(continued)


5. Animate point A and have it move around the circle.

- Right-click on A. Select Animate Point. The resulting motion controller can be used to speed up, slow down, pause, or stop the animation. See Figure 4.



Figure 4

6. Calculate $\frac{\sin A}{\cos A}$.

- Using the selection tool, click on the two measured values: sin A and cos A.
- Click on Measure. Select Calculate.
- Click on Values and choose sin A.
- Click . Then, click on Values and choose cos A. Press enter.

