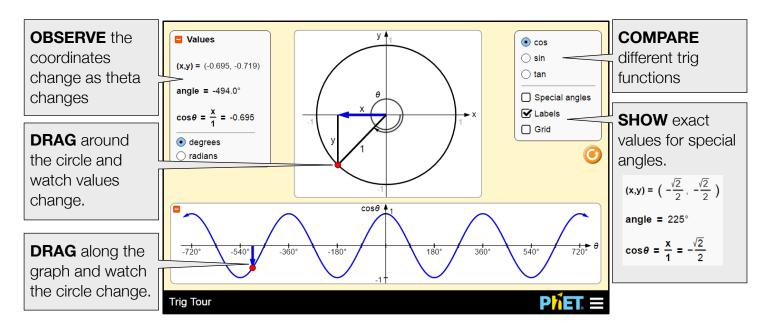
## **PATT** Tips for Teachers

The **Trig Tour** simulation allows students to flexibly translate between multiple representations of trig functions, discover patterns, estimate or determine exact values of trig functions, and deduce the sign (+, -, 0) of trig functions for any given angle without a calculator.



## Insights into Student Use

- Unless prompted, students may not notice that they can drag both the red dot along the unit circle and the red dot along the graph.
- Students can continue to rotate the red dot around the circle many times even as the graph extends outside of view.

## **Suggestions for Use**

Sample Challenge Prompts

- Using the formula for the circumference of a circle, find the circumference of a unit circle. What is the relationship between radians and circumference?
- Minimize the Values panel and estimate the coordinates of a point on the circle. Maximize the panel to check your answer. Turn on the Grid to help you!
- What does the graph of each trig function look like beyond the view in this sim? How do you know?
- Turn on Special Angles and play with the sim. Write down any patterns you observe in the Values panel, the graph, or around the circle.

• Keep  $\theta$  in the first quadrant and turn on Labels. Use your knowledge of right triangle trigonometry to explain why  $\cos\theta = x$ ,  $\sin\theta = y$ , and  $\tan\theta = \frac{y}{x}$ . Using two functions in your function machine, find an example of when the order in which you place them matters. Describe your findings. Find a different example of when the order does not matter. Summarize when the order does and does not matter.

Sample Pre- and Post-Assessment Questions

- Determine the sign (positive or negative) for sin(330°), cos(205°), and tan(112°).
- Determine the value of  $\theta$  for the following coordinate pairs:

$\left(\frac{1}{2},\frac{\sqrt{3}}{2}\right),\left(-\frac{1}{2},\frac{\sqrt{3}}{2}\right)$	1	$\sqrt{3}$	$\left(\sqrt{3}\right)$	$1 \left( \right)$	$\sqrt{3}$ 1
$\left(\frac{\overline{2}}{2}, \frac{\overline{2}}{2}\right), \left(\frac{\overline{2}}{2}, \frac{\overline{2}}{2}\right)$	$\frac{1}{2}$ ,-	$\frac{1}{2}$	, 2,	<u>-</u> ]'(-	$\overline{2}, \overline{2}$

See all published activities for Trig Tour here.

For more tips on using PhET sims with your students, see Tips for Using PhET.