In activity 8, you are asked to solve trig equations. These, of course, are equations that contain at least one of the six functions in it. In the activity we are trying to connect the graphical solution to the algebraic solution(s). In your Aleks program, you will be asked to solve equations algebraically first, over the interval $[0, 2\pi)$ and then find all solutions. This activity tries to show you where the solutions on the interval $[0, 2\pi)$ lie, why there are an infinite number of them if we don't limit the interval, and where those infinite solutions are located. This activity also talks about the variable k when finding the general solution.

Review questions:

1. Define the angle measurement system of **degrees** and give a rationale for its importance.

2. Define the angle measurement system of **radians** and give a rationale for its importance.

3. When using the inverse trigonometric functions to solve algebraic problems, we must take the domain and range into consideration. For the equation $\arcsin\left(\sin\left(\frac{5\pi}{4}\right)\right) = x$, Joey claims the $x = \frac{\pi}{4}$. Explain why this is a better answer than $x = \frac{5\pi}{4}$. *Hint: use the order of operations and consider the domain and range of* $\arcsin(x)$.

4. In your own words, explain how you would find the solution(s) to a trigonometric equation graphically. Use your explanation to solve $\sin 2x = -0.4x + 0.9$

5. Explain the significance of using the interval $[0, 2\pi)$ instead of some other interval like $[-\pi, \pi)$ or $\left[-\frac{\pi}{2}, \frac{3\pi}{2}\right)$ of the same length.

6. A student finds all solves to the equation $\tan x - 1 = 0$ and gets the answer $x = \frac{\pi}{4} + 2k\pi$, $x = \frac{5\pi}{4} + 2k\pi$. He checks his answer with another student who got $x = \frac{\pi}{4} + k\pi$, whose answer is correct and why?