Solving Trig Equations on a Graphing Calculator   Name _____

First, solve the following equations by hand.

1. $4\sin x = 2$ 2. $3\csc^2 x = 4$ 3. $\sin^2 x \cos x = 4\cos x$

Next, convert your exact answers to decimals, using a calculator.

1.   2.   3.

Finally, use your graphing calculator to check your answers.

(Note: You will have to enter $y_1 = 3\csc^2 x$ as $y_1 = 2(\csc(x))^2$ on the calculator!)

Steps:

1. Put your calculator in RADIAN mode!

2. Enter the left side of the equation as y_1 and the right side of the equation as y_2.

3. To solve on the interval $[0, 2\pi)$, set the window of your graph to include $x\min = 0$ and $x\max = 2\pi$. Adjust the y-values to be able to see the graphs and where they intersect.

4. Graph the two functions, and see where they intersect.

5. Use the *intersect* feature on the calculator to determine the solutions.

Tomorrow, we will be solving trig equations with multiple angles algebraically. This means we will have a trig equation that cycles more than once on the interval $[0, 2\pi)$. As a result, we will find many more solutions to an equation.

Solve this equation using your graphing calculator. You should find 6 solutions from $[0, 2\pi)$.

$$\sec(3x) = \sqrt{2}$$