Assignment 3: Solving Equations (0.1&2) **Name______________________**
Please provide a handwritten response.

1a. One way to solve equations on TI calculators is to use the **SOLVER**. For example you can find the zeros of $f(x) = x^2 - 3x + 2$ using the solver.

PROBLEM	TI-83 Plus/TI-84 Plus	TI-86
FIND ALL ZEROS OF: $f(x) = x^2 - 3x + 2$	To access **Solver** press **MATH 0 ENTER** The calculator will show: **Eqn: 0=** Enter $x^2 - 3x + 2$ **ENTER.** **<u>BEWARE</u>**: The calculator will show the results of the last problem solved at this point. To find the first zero press **ALPHA ENTER (SOLVE).** To find another zero you must enter a 'guess' in the $x =$ line and press **ENTER**. A good way to estimate a zero is to graph the function (Use the $y =$ key) and look at where the graph crosses the x-axis. You will have to **QUIT** the graph and re-enter the **Solver**. This process will need to be repeated for each zero.	**To access SOLVER press 2ND GRAPH** The calculator will show: **eqn:** Enter $x^2 - 3x + 2 = 0$ **ENTER.** **<u>BEWARE:</u>** The calculator will show the results of the last problem solved at this point. To find the first zero press **F5 (SOLVE).** To find another zero you must enter a 'guess' in the $x =$ line and press **ENTER**. You can use the **GRAPH (F1)** to obtain the graph from the solver menu. You will have to **EXIT** the graph and re-enter the **SOLVER.** This process will need to be repeated for each zero. ——— Use the polynomial solver **2ND PRGM (POLY)** The calculator will show **POLY** **order =** When you enter **2 ENTER** the calculator will show $a2x \wedge 2 + a1x + a0 = 0$ and you enter the coefficients as 1, -3, 2 and press **F5 (SOLVE)**

Record the results below.

1b. Now solve $y = x^3 - x^2 - 2x + 2$ (enter as $0 = x \wedge 3 - x^2 - 2x + 2$) and record the result below.

2a. Use the SOLVER to solve the equation $\cos x = x^2 - 1$ and record the results below. You may want to look at the graph to determine the number of zeros the function has. Enter your equation as follows:

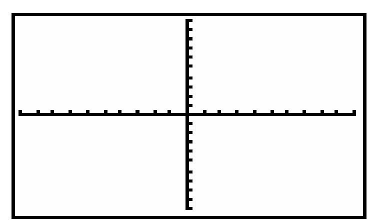
PROBLEM	TI-83 Plus/TI-84 Plus	TI-86
Solve $\cos x = x^2 - 1$	Enter your equation as $0 = \cos(x) - x^2 + 1$ and the graph as $y = \cos(x) - x^2 + 1$	Enter your equation as $\cos x = x^2 - 1$ and use the graph option as above to estimate the second zero.

Record the output below.

2b. We can find all the zeros of $\cos x = x^2 - 1$ by starting from a graph.

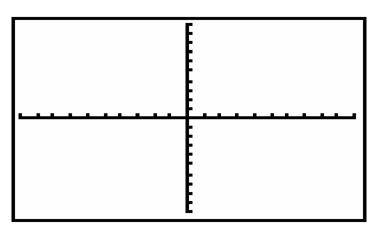
PROBLEM	TI-83 Plus/TI-84 Plus	TI-86
Solve $\cos x = x^2 - 1$ from a graph.	Graph $y = \cos(x) - x^2 + 1$ Go to **CALC (2ND TRACE)** and select **2 zero.** Use **arrow keys** to move the cursor left of the zero for a **Left Bound** and then use them to find a **Right Bound**. Press **ENTER** to set each bound. You can just press **ENTER** for **Guess** and the calculator will give you the zero.	Graph $y = \cos x - x^2 + 1$ From the **GRAPH** menu **MORE MATH ROOT (F1)** Use **arrow keys** to move the cursor left of the zero for a **Left Bound** and then use them to find a **Right Bound**. Press **ENTER** to set each bound. You can just press **ENTER** for **Guess** and the calculator will give you the zero.

Sketch the graph and record the results below. Do they agree with the results from **2a**?



$-10 \le x \le 10, -10 \le y \le 10$

2c. Now change parts **a** and **b** to solve the equation $\cos x = x^2 - 5$. Remember to replace the $x =$ with an appropriate value suggested by your graph. Record your solution below.



$-10 \le x \le 10, -10 \le y \le 10$