

Assignment 3: Solving Equations (0.4)
Please provide a handwritten response.

Name _____

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-86 |
|---|--|---|
| <p>FIND ALL ZEROS OF: $f(x) = x^2 - 3x + 2$</p> | <p>To access Solver press MATH 0 ENTER The calculator will show: Eqn: 0= Enter $x^2 - 3x + 2$ ENTER.</p> <p>BEWARE: 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.</p> | <p>To access SOLVER press 2ND GRAPH The calculator will show: eqn: Enter $x^2 - 3x + 2 = 0$ ENTER.</p> <p>BEWARE: 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.</p> <hr/> <p>Use the polynomial solver 2ND PRGM (POLY) The calculator will show POLY order = When you enter 2 ENTER the calculator will show $a2x^2 + a1x + a0 = 0$ and you enter the coefficients as 1, -3, 2 and press F5 (SOLVE)</p> |

Record the results below.

1b. Now solve $y = x^3 - x^2 - 2x + 2$ (enter as $0 = x^3 - x^2 - 2x + 2$) 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:

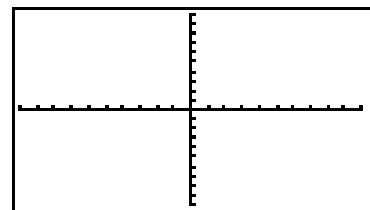
| PROBLEM | TI-83 Plus | TI-86 |
|--------------------------|---|--|
| Solve $\cos x = x^2 - 1$ | Enter your equation as $0 = \cos(x) - x^2 + 1$ and the graph as $y = \cos(x) - x^2 + 1$ | Enter your equation as $\cos x = x^2 - 1$ and use the graph option as above to estimate the second zero. |

Record the output below.

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

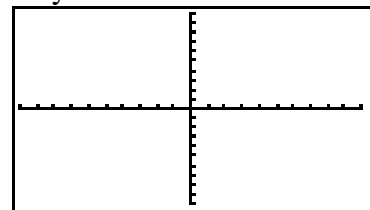
| PROBLEM | TI-83 Plus | TI-86 |
|--|--|---|
| Solve $\cos x = x^2 - 1$ from a graph. | Graph $y = \cos(x) - x^2 + 1$ Go to CALC (2ND TRACE) and select 2 zero . Use arrow keys to move the cursor left of the zero for a Left Bound and then use them to find a Right Bound . Press ENTER to set each bound. 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?



$$-10 \leq x \leq 10, -10 \leq y \leq 10$$

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.



$$-10 \leq x \leq 10, -10 \leq y \leq 10$$