Solving equations using a graphing calculator   Name_____
Period _____ Teacher _____ School_____

In this activity you will learn how to use your graphing calculator to solve an equation. This process and be use to find the exact or approximate solution for almost any equation. You can use this to check your work or find the answers to problems that you do not know how to solve on paper. Keep this sheet for reference because the instructions will work for most equations.

Solve the equation $4x + 2 = -2x – 5$. To do this enter each side of the equation into your ⬜Y=⬜editor (figure 1). Then graph the equations making sure you can see where they cross (figure 2). Now your goal is to see find the x value for where the lines meet. You can use your calculator to do this. Press ⬜2nd⬜ ⬜TRACE⬜ to see the calculate window (figure 3). You want to find the intersection of the two graphs so press ⬜5⬜. This will take you back to the graph and will ask you to select the first curve (figure 4). Since you only have two equations graphed press ⬜ENTER⬜ and the curser will move to the other line and you will need to press ⬜ENTER⬜ again. Now the calculator will need you to move the curser by pressing ⬜◁⬜or ⬜▷⬜ along the graph to where the lines meet and then press ⬜ENTER⬜. This will give you the intersection of the lines. Right now we are only concerned with the x value so our solution for the equation is $x \approx -1.16667$ or the exact answer is $x = \dfrac{-7}{6}$. This equation could easy have been solved on paper or even mentally but this process will work to solve many equations. Solve the equations below using the same process. Some of these equations you will learn how to solve on paper later in this course and others are beyond this course but with your calculator you can solve them. We will also show other ways to use your calculator to solve equations. Find all solutions many of these have more then one.
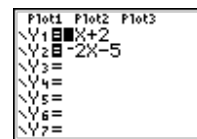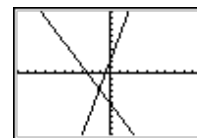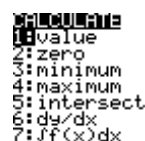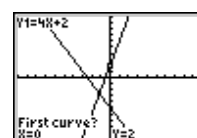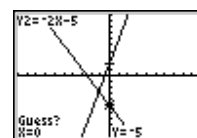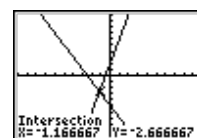

Figure 1

Figure 2

Figure 3

Figure 4

Figure 5

Figure 6

Figure 7

Problems
1. $x^2 + 3 = 5$ see figure 7 to see how to enter this one. x = {-1.414, 1.414}
2. abs(x – 3) – 2 = 2 x = {-1,7}
3. $x^2 – 4x = 0$ x = {0, 4}
4. $\cos(x) = x^2$ before you graph this one press ⬜MODE⬜ and make sure Radian is selected (figure 8) if not arrow down to it and press ⬜ENTER⬜. x = {-.824, .824}
5. $x^3 = x + 2$ see figure 9 for help entering this one. x = {1.521}
6. $x^2 = 4$ x = {-2, 2}
7. $x^2 = -4$ No solution, this problem will lend to some good discussion about not all problems having a solution

Figure 8

Figure 9

On the back of this paper write a paragraph about what you learned about solving equations using your calculator. It is important that the students write about what they have found out about solving equations using a calculator. Also it is important to hav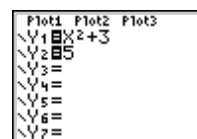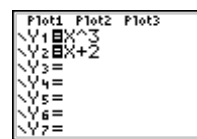e some class discussion about their findings.