

Worksheet #1 - Graphing with the Calculator

Spring 2007

Objectives

- Start using your calculators now. They will be used as a tool to answer questions asked in this course. It is very important that you start now in learning the different features of your calculator.
- Answer questions in this course with complete sentences. Answers need be precise - conveying what is important and relevant. Know how to answer the questions that begin with “why”.
- Work sheets and homework can be done in groups. Having the right answers on your paper is not important - knowing how to solve problems correctly is.

Problem #1 - Buttons

- “Y=” This screen lets you enter different functions to be graphed. Enter $x^2 - 12x + 20$ for Y_1 . What button did you have to use for the variable X ?
- “Window” This screen lets you enter the window that will be displayed. If you don’t get the window correct, you will not see you graph. Enter $Xmin = -5$, $Xmax = 5$, $Ymin = 0$, and $Ymax = 100$.
- “Graph” This button will draw the graph of the functions that you have entered. Again, your viewing window might need to be altered. Is this a good size for the window? Use the “Window” button again to alter the window size.
- The graph of the function $y = x^2 - 12x + 20$ is a parabola. Change your viewing window so you can tell the graph is a parabola. Can you see the vertex of the parabola? What are the new values of $Xmin$, $Xmax$, $Ymin$ and $Ymax$ that you are using?

Problem #2 - More Buttons

- Graph the function $x^2 - 12x + 16$.
- Press the “Trace” button. What is different about the screen?
- Press the left and right arrows. What is this doing to the screen?
- Type the number 3 and then press ”Enter”. What did this do?
- What is the definition of the y -intercept of a function? What is the y -intercept of this function? How did you determine its value?
- What is the definition of a root of a function? How many roots does this function have? Use the “2nd Calc Zero” procedure to approximate one of the roots. This might be the exact value of the root, but it might be an approximation.
- Use the quadratic formula to verify the zeros of this parabola.

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Problem #3 - Different Function

- Graph the function $y = 20xe^{-0.3x}$. Use $Xmin = 0$ and $Xmax = 20$.
- Write what you typed into the calculator for this function.
- What are your values of $Ymin$ and $Ymax$ that let you see the entire graph?
- What is the value of the function at $x = 2$? Is the function increasing or decreasing at $x = 2$?
- What is the value of the function at $x = 8$? Is the function increasing or decreasing at $x = 8$?
- Approximate the maximum value of this function? What is the x -value at this maximum point?