

Math 1414
College Algebra
Lab Exercise # 2
Dr. Word

Name: _____

Date: _____

Section: _____

Semester: _____

Grade: _____

Attach computer printouts to this sheet and submit your assignment to your instructor or the lab supervisor by Friday of the week assigned.

2a. Use the TI-83 to build and print a table and graph $y = x^2$. (Print your results)

2b. A small rocket is launched from the roof of a building that is 60 feet tall with a velocity of 150 ft/sec. The height the rocket is above the ground was monitored at 1, 3, 5, 7, and 9 seconds. The heights measures were 194, 366, 410, 326, and 114 feet, respectively. Label the two lists TIME and HGHT and load the given data into the lists on a TI-83 calculator. Draw a scatter plot and use the regression functions to show that the function that describes the motion of the rocket is quadratic. Place the regression equation in Y1 and graph the function. (Print)

2c. Use the model found in 2b. to determine how high and at what time (in seconds) the rocket reaches its maximum height and at what time (in seconds) the rocket will strike the ground. (Print)

2d. Compare the graphs in 2b. to the graph in 2a. and describe the vertical and horizontal shifts, the vertical stretch, and the reflection.

2e. Use the TI-83 to graph $f(x) = \begin{cases} 60, & x < 0 \\ Y1(x), & 0 \leq x \leq 9.76 \\ 0, & x > 9.76 \end{cases}$ (Print)

Evaluate $f(-2)$, $f(2)$, $f(6)$, and $f(12)$ on the TI-83 and print the results. Write a brief description of the “physical” meaning of the graph values as they relate to 2b. and 2c.

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****If in doubt, print it out!****

2a) To split the screen, touch [MODE], arrow down to the bottom of the list, arrow over to HORIZ, and touch [ENTER]. [2nd] [QUIT] to go to home screen. To graph the equation, see lab 1 for guidance if needed.

2b) To begin, you must decide what is your x-list and what is your y-list.

To load your x-list and y-list into the Stats editor:

- * Touch [STAT] then 1:EDIT.

To rename the lists:

- *Arrow up to L1.

- *Touch [2nd] [DEL] (Insert).

- *Type in the name of the list. (Alpha lock is engaged already. If the A is not flashing by NAME, you turned it off. To turn it back on, touch [2nd] [ALPHA] (A-LOCK))

- *Touch [ENTER] after you type in the list name.

- *Do the same steps above to name your y-list.

- *Put the x and y values into the appropriate lists.

To create a scatterplot:

- *Touch [2nd] [Y=] (STAT PLOT)

- *Touch [ENTER].

- *Arrow over to ON and touch [ENTER] to turn the plots on.

- *Be sure the first block is highlighted after TYPE. If it isn't, arrow over to it and touch [ENTER].

- *Arrow down to Xlist and type the x-list name. Another way is to touch [2nd] [STAT] (LIST), and arrow down to the list name.

- *Touch [WINDOW]. Window adjustments must be made. Keep in mind you are given the values of x and y.

- *Touch [GRAPH].

What is the general shape of the curve? This will help you narrow down the Regression equations.

****To find the equation of a line:**

- *Touch [STAT].

- *Arrow over to CALC

- *Arrow down and chose from LinReg(ax+b)(Linear Regression), QuadReg (Quadratic Regression), CubicReg (Cubic Regression) or QuartReg (Quartet Regression).

- *Touch [ENTER].

- *Touch [2nd] [STAT] (LIST) and arrow down to the x-list name.

- *Touch a comma (,) and then [2nd] [STAT] (LIST) to get the y-list name. Touch [ENTER] to activate the command.

You now have the equation to the line. Cut and Paste this equation to the Y= to graph and see if it is the best fit line.

- *Touch [Y=]. Arrow down to where you want the equation to go.

- *Touch [VARS].

*Arrow down to Statistics... Touch [ENTER]

*Arrow over to EQ and touch [ENTER].

Touch [GRAPH]. Repeat the steps above starting with the ** until you find the best fit line.

2c) Touch [2nd] [TRACE] (CALC). For the maximum, use 4:maximum. For the minimum, use 2: zero. Be sure to follow the prompts on the bottom left of the screen. The screen will say LEFT BOUND? (move your cursor with the arrow keys to the left side of where you think the max or min is. Touch [ENTER]. Now the screen says RIGHT BOUND? Move the cursor to the right of where you think the min or max is. Touch [ENTER]. The screen now says GUESS? Touch [ENTER].

2d) This is not a calculator question. Use your textbook.

2e) To Graph the piecewise function, you have to trick the calculator.

*Be sure Y1= contains the correct equation to the graph.

*Turn off Y1= by arrowing over to the = and touching [ENTER].

*In Y2= type the equation in the form of:

$$Y2=(60)(\text{its domain}) + (Y1)(\text{first domain})(\text{second domain}) + (0)(\text{its domain})$$

*The <, >, =, ≤, ≥ are found in [2nd] [MATH] (TEST)

*The Y1 is found in [VARS], Arrow over to Y-VARS, Touch [ENTER], and [ENTER] again.

When you are done, touch [GRAPH].

To Evaluate the values, touch [2nd] [TRACE] (CALC), then VALUE. Type in the value to be accessed. Be sure to write the brief description.