

Name: \_\_\_\_\_

Be sure to show your work!

1. (\_\_\_\_/11 points) Use the following table of data to create a graph in Excel. Change to a “double ended” by graphing the “Paying Customers” along a secondary axis.

Month	January	March	May	July	October
	1	3	5	7	10
Profits (\$)	\$25,000	\$7,000	\$30,000	\$70,000	\$45,000
Paying Customers	12	8	14	19	25

Briefly explain how you added your secondary axis and then sketch the resulting graph.

2. (\_\_\_\_/12 points) Using the profits data from problem #1, model the profits using linear and exponential trendlines. Write down equations you found along with predictions for December’s profits.

	Equation:	December’s Profits:
Linear		
Exponential		

3. (\_\_\_\_/15 points) Suppose that my “x” value is located in cell A1. Write an Excel formula for each of the following functions (I want the EXACT INPUT – that is exactly what you should type):

(a)  $f(x) = \frac{2x^3}{\sqrt{3x - 5}}$

(b)  $f(x) = 15e^{-x^2}$

(c)  $f(x) = \begin{cases} 0 & \text{if } x \leq 10 \\ 0.15(x - 10) & \text{if } x > 10 \end{cases}$

4. (\_\_\_\_\_/12 points) Consider the functions  $f(x) = x^3 - 6.5x^2 + 3.75x + 5$  and  $g(x) = e^{0.5x}$ . How many times do the graphs of  $f(x)$  and  $g(x)$  cross if  $0 < x < 10$ ? Determine the both coordinates (that is  $(x, y) = (?, ?)$ ) for each point of intersection.

5. (\_\_\_\_\_/12 points) Jim invested some money in an account which earned 6% interest compounded quarterly. He made the following investments at the **beginning** of each quarter:

Quarter	1	2	3	4
Deposit	\$1,000	\$1,500	\$1,250	\$700
Balance (at the end of the quarter)				

Fill in the table above and state the formulas you used to arrive at your answers.

6. (\_\_\_\_\_/13 points) You want to buy a house which costs \$250,000. So you make a 10% down payment and take out a 30 year mortgage at 7% (compounded monthly) to pay off the rest.

(a) What will your monthly mortgage payments be? [Also, state the formula you used to find your answer.]

(b) How much will you still owe after 15 years? [Also, state the formula you used to find your answer.]

7. (\_\_\_\_\_/13 points) A very crafty car dealer says he can get you a \$11,000 car for only \$250 a month. Although, you do have to make these car payments for 5 years. What interest rate (compounded monthly) is he charging? [Please describe how you found your answer and include the formulas you used.]

8. (\_\_\_\_\_/12 points) If you can afford to make payments of \$300 a month on a 3 year loan which charges 8% interest (compounded monthly), how much can you afford to borrow? [Please describe how you found your answer and include the formulas you used.]