Math 1314 ONLINE
Alternate 3

1. Suppose $f(x) = \dfrac{2x^2 - 9x + 12}{5x^2 + 6}$. Find the zeros of the function.

2. Suppose $f(x) = 0.086x^3 - 1.286x^2 + 5$. Find all relative extrema.

3. Suppose $f(x) = 0.086x^3 - 1.286x^2 + 5$ and $g(x) = 1.686x^2 + 2.784x - 3.127$. Find the x and y coordinates of any points of intersection.

4. Suppose $f(x) = 2xe^{-x^2} - 0.28x$. Find all zeros.

5. Suppose $f(x) = 2xe^{-x^2} - 0.28x$. Find all relative extrema.

6. Suppose $f(x) = 2xe^{-x^2} - 0.28x$ and $g(x) = 4.29 - 0.56x^2$. Find the x and y coordinates of any points of intersection.

For problems 7 – 15 use this data set. Using the Spreadsheet View of GGB, enter the data and create a list.

x	0	4	7	8	11	14
y	18	16	19	22	28	26

7. What is the linear regression model for this data set?
8. What is the value for r^2 for the linear regression model?
9. What is the quadratic regression model for this data set?
10. What is the value for R^2 for the quadratic regression model?
11. What is the cubic regression model for this data set?
12. Use the cubic regression model to predict the y value when x = 20.
13. What is the exponential regression model for this data set?
14. Use the exponential regression model to predict the y value when x = 20.
15. What is the result when you find the power regression model? Why?

16. The table shown below gives a company's monthly costs to produce its best-selling product. Using the data, find the quadratic, cubic, quartic and exponential regression models and find the value for R^2 for each regression. What is the largest R^2 value among the four that you found. (Note, you do not need to state all of the regression models. The answer to this question is the largest value for R^2.)

Month	1	2	3	4	5	6
Costs in thousands of dollars	128	137	146	142	148	144

17. Using the regression model that has the largest value for R^2, find the cost in month 9. Is this model a good choice to predict future values? Why?

18. Using the graph shown below, find $\lim_{x \to 0} f(x)$ if it exists.
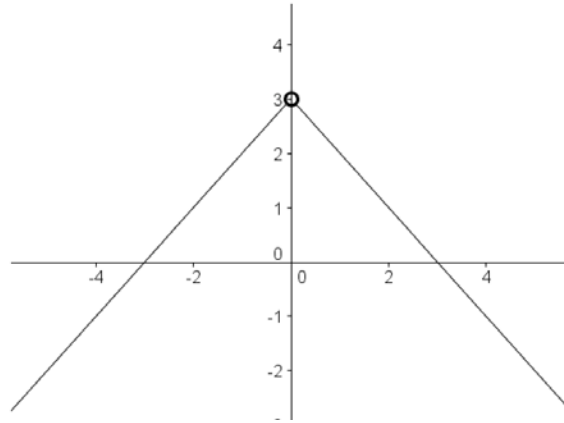
19. In what two situations did we see that a limit can fail to exist?

20. Suppose you want to find $\lim_{x \to 2} f(x)$. As x gets close to 2 with values that are smaller than 2, y gets close to 5; and as x gets close to 2 from with values that are larger than 2, y gets close to 6. What conclusion can you draw?