Secondary Math 2 Name_____

8.4 Exponentials and Comparing Functions

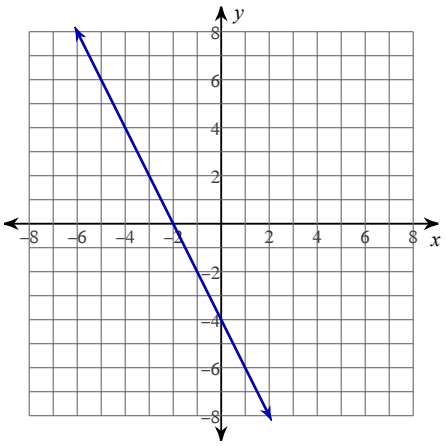
Date_____ Period____

Determine if the following are linear, quadratic, or exponential.

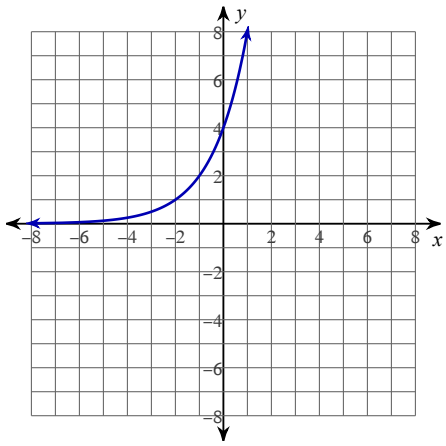
1) {(-2,-2), (-1,1), (0,4), (1,7), (2,10)}

2) $y = -3(x-2)^2 + 7$

3)



4)



5) { (3,8), (4,24), (5,72), (6,216)}

6) Earning a $40,000 salary with 15% commission.

7) Bacteria that split in half every 30 minutes.

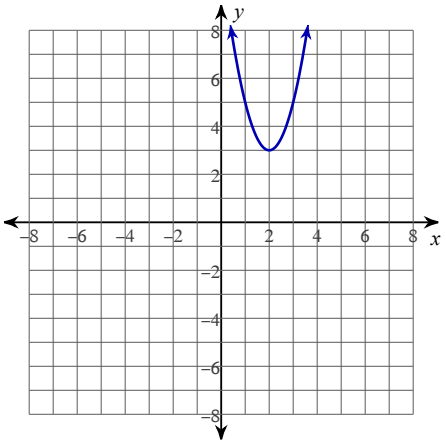
8) A gumball machine that gives out 5 gumballs for every dime you put in.

9) Name the kinds of functions (linear, quadratic, exponential) that have the slowest and the fastest growth rate.

10) Two seagulls dive into the ocean. The given functions represent the height of each seagull above the surface of the ocean as a function of the seagull's horizontal distance from a certain buoy. For each set of functions, determine which bird descends deeper into the ocean.

a. $y = 3(x - 5)^2 - 9$ or g={(-8,0), (-6,-12), (-4,0)}

b. or $g = 2(x + 4)^2 + 1$



11) Three students are shooting wads of paper with a rubber band, aiming for a trash can in the front of the room. The height of each student's paper wad in feet is given as a function of the time in seconds. Which student's paper wad flies the highest?

Alejandro: $y = -x^2 + 2x + 7$
Melissa: $g = -(x - 3)^2 + 7$
Connor: After 3 seconds his wad achieves a maximum height of 6.5 feet

12) Suppose that you have been offered a position at a prestigious company. You may choose how your salary is paid. Option 1 is described by the quadratic equation $S = 2500x^2 + 2500x + 60000$ where x is the number of years you are with the company and S is the yearly salaray in dollars. Option 2 has a starting yearly salary of $35000, but you will get a 25% raise each year. Make a table of values for each salary. If you plan to work for this company for 5 years, which option should you choose? If you plan to work for this company for 30 years, which option should you choose?

13) Create your own scenario that compares two of the following functions: linear, quadratic, or exponential. Then solve your own problem.

Identify each piece of the equation. Then determine the growth or decay rate.

14) $y = 5 \cdot 1.46^{t}$

15) $y = 3 \cdot 0.49^{t}$

16) $y = 412 \cdot 1.23^{t}$

17) $y = 0.13^{t}$

18) $y = 100 \cdot 1.12^{3t}$

19) $y = 7 \cdot 0.87^{5t}$

20) $y = 12 \cdot 1.43^{2t}$

21) $y = 63 \cdot 1.22^{4t}$