Define

Slope:

***y*-intercept:**

What is the formula for slope:

Graph each of the following functions in www.desmos.com:

$$y = x$$
$$y = x + 4$$
$$y = x - 5$$
$$y = x + 9$$
$$y = x - 7$$

1)What do you notice about the graphs and their related equation?

2)What do they have in common?

3)What is different about them?

4)Identify two points that are on each curve, calculate the slope of each line.

5)Does this fact hold true for:

$$y = x^2$$
$$y = x^2 + 4$$
$$y = x^2 - 5$$
$$y = x^2 + 9$$
$$y = x^2 - 7$$

6)What could you notice about $y = x + 12$ and $y = x^2 + 12$ without graphing them?

Graph each of the following functions in www.desmos.com:

$$y = x$$
$$y = 2x$$
$$y = 3x$$
$$y = 4x$$
$$y = 5x$$

7)What do you notice about the graphs and their related equation?

8)What do they have in common?

9)What is different about them?

10)Identify two points that are on each curve, calculate the slope of each line.

11)Does this fact hold true for:

$$y = x^2$$
$$y = 2x^2$$
$$y = 3x^2$$
$$y = 4x^2$$
$$y = 5x^2$$

12)What could you notice about functions, $y = \frac{2}{3}x + 7$ and $y = \frac{3}{2}x + 7$, without graphing them?

Graph each of the following functions in www.desmos.com:

$$y = -x$$
$$y = -x + 4$$
$$y = -x - 5$$
$$y = -x + 9$$
$$y = -x - 7$$

13)What do you notice about the graphs and their related equation?

14)Does this fact hold true for:

$$y = -x^2$$
$$y = -x^2 + 4$$
$$y = -x^2 - 5$$
$$y = -x^2 + 9$$
$$y = -x^2 - 7$$

15)What could you notice about the function, $y = -|x| + 7$, without graphing it?