

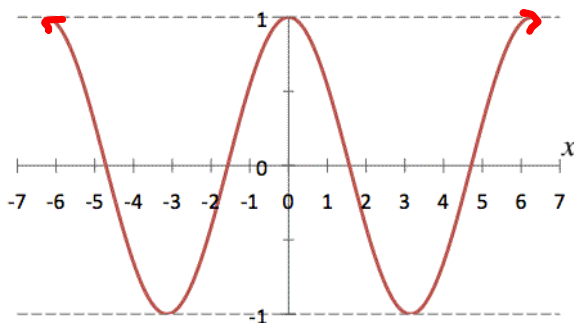
Warm Up:

Evaluate $f(g(-3))$ if $f(x)=4x-2$ and $g(x)=-x^2-4$

$$g(-3) = -(-3)^2 - 4 = -13 \quad f(-13) = 4(-13) - 2$$

(-54)

Find the domain and range of the graph below.



$(-\infty, \infty)$

\mathbb{R}

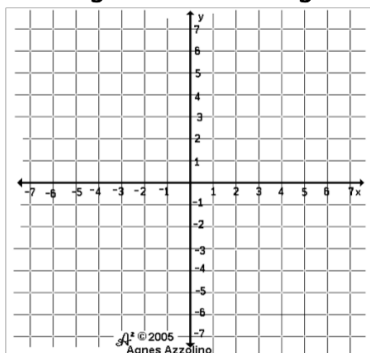
$[-1, 1]$

$-1 \leq y \leq 1$

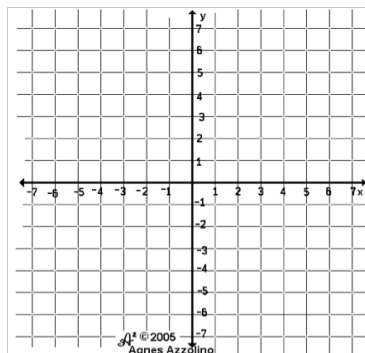
Name: _____ Period: _____ Date: _____

1. Graph the lines for the equations on the graphs provided below (2 lines on the same graph).

a. $y = -\frac{1}{3}x + 1$ $y = -\frac{1}{3}x - 2$



b. $y = 2x + 3$ $y = 2x - 4$

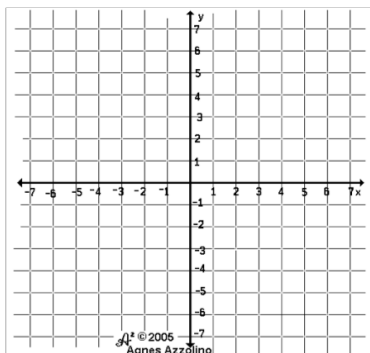


Examine the graphs. What is the relationship between the lines on each graph? _____

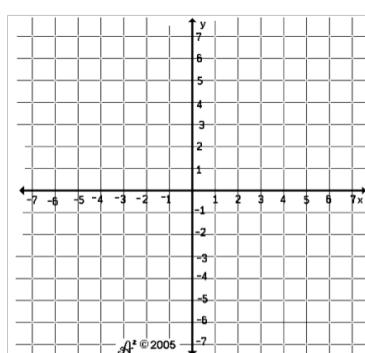
Now look at the equations for each graph. What about the equations do you think shows that the lines have this relationship?

2. Graph the lines for the equations on the graphs provided below (2 lines on the same graph).

b. $y = 3x + 1$ $y = -\frac{1}{3}x + 4$



b. $y = -\frac{3}{2}x + 5$ $y = \frac{2}{3}x - 1$



Examine the graphs. What is the relationship between the lines on each graph? _____

Now look at the equations for each graph. What about the equations do you think shows that the lines have this relationship? **hint: it's the same part of the equation in the relationship in part 1, but there are two things that change in this relationship**

In conclusion....

The slopes of **parallel** lines are the same. They only have different y-int.

The slopes of **perpendicular** lines are (2 things to describe this) opposite +/- & reciprocal. They COULD have the same y-int, but don't have to.

Apply what you learned...

1. Which of the following lines are **parallel**?

a. $-x + 2y = 6$

b. $y = \frac{1}{2}x - 1$

c. $y = -\frac{1}{2}x - 2$

2. Which of the following lines are **perpendicular**?

a. $y = -\frac{1}{2}x + 1$

b. $3y + x = -4$

c. $y = 2x + 4$

3. Give an example of a line that is **parallel** to the line $4x - 2y = 16$.

$y = 2x + 5$

$y = 2x - 8$

4. Give an example of a line that is **perpendicular** to the line $y = -2x - 2$

$y = \frac{1}{2}x - 3$

5. Which of the following line(s) are **perpendicular** to the line $y = \frac{1}{3}x - 3$?

a. $4 = 6x + 2y$

b. $y = -3x - 6$

c. $y = -3x + 4$

6. Which of the following line(s) are **parallel** to the line $y = -2x + 6$?

~~a. $8x = -4y + 24$~~

~~b. $-2x + 6 = y$~~

~~c. $y = -\frac{1}{2}x - 2$~~

Find the equation of a line that is parallel to $y=3x+1$ and passes through the point $(-2,-5)$.

$$\begin{array}{l} y - 5 \\ m = 3 \\ x - 2 \\ b = \end{array}$$

$$\begin{aligned} -5 &= 3(-2) + b \\ -5 &= -6 + b \\ 1 &= b \end{aligned}$$

$$y = 3x + 1$$

Find the equation of a line that is perpendicular to $y=2x-1$ and passes through the point $(6,1)$.

Find the equation of a line that is perpendicular to $2x+3y=9$ and passes through the point $(-6,8)$.

