1. Find the slope of the line passing through the points $(-1,-7)$ and $(8,-6)$.

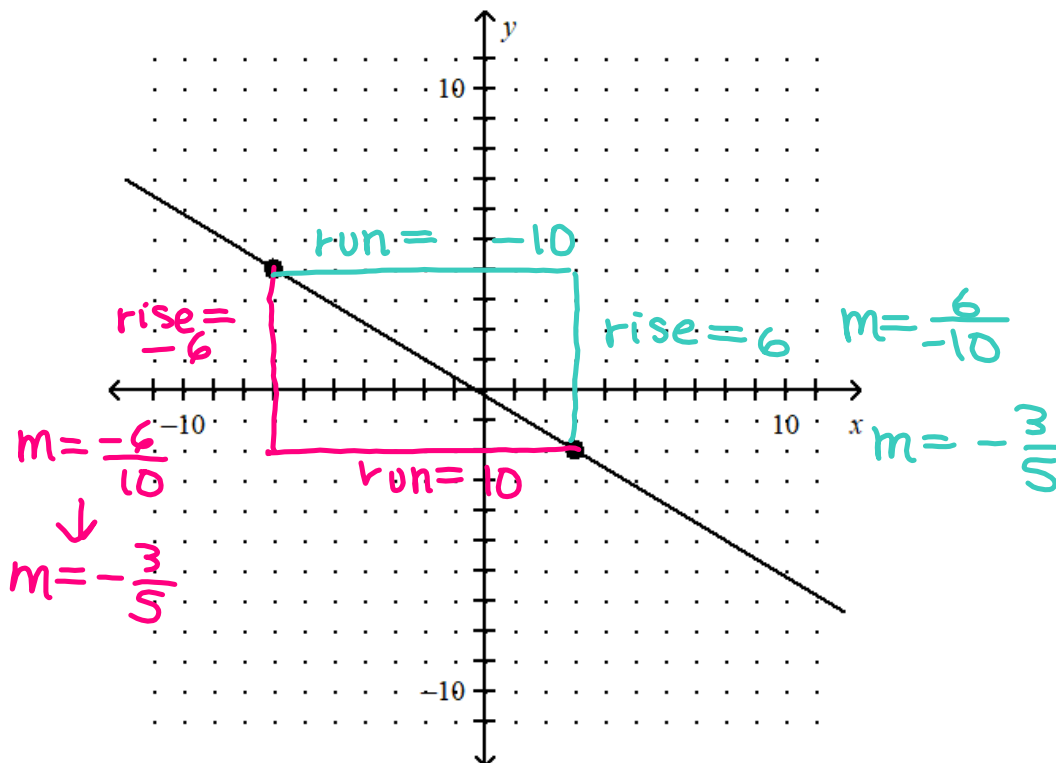$$x_1 \ y_1 \qquad x_2 \ y_2$$

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

$$m = \frac{-6 + -7}{8 + -1}$$

$$\boxed{m = \frac{1}{9}}$$

2. Find the slope of the line.

run = -10

rise = -6

rise = 6 $m = \frac{6}{-10}$

$m = \frac{-6}{-10}$

run = 10 $m = -\frac{3}{5}$

$m = -\frac{3}{5}$

3. Find $f\left(\dfrac{1}{3}\right)$. $f(x) = 18x^2 - 12x - 3$

$$f\left(\tfrac{1}{3}\right) = \underbrace{18\left(\tfrac{1}{3}\right)^2 - 12\left(\tfrac{1}{3}\right) - 3}_{\text{calculator}}$$
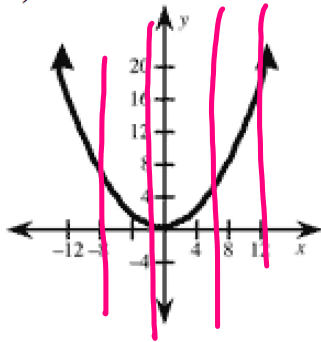
$$f\left(\tfrac{1}{3}\right) = -5$$

4. Is the relation $\left\{(-6,-4),(-2,-4),(-1,-4)\right\}$ a function? Why or why not?
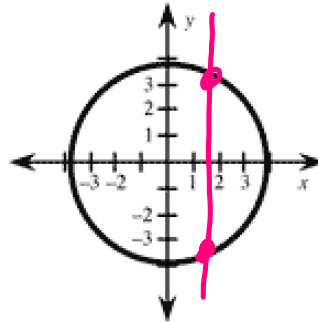
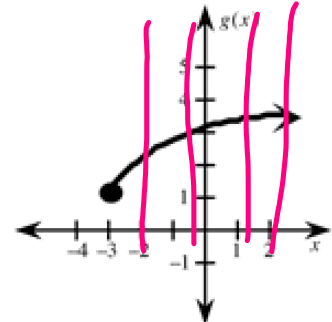function

x's don't repeat

5. Are the following functions?

a)

function

b)

not a function

c)

function

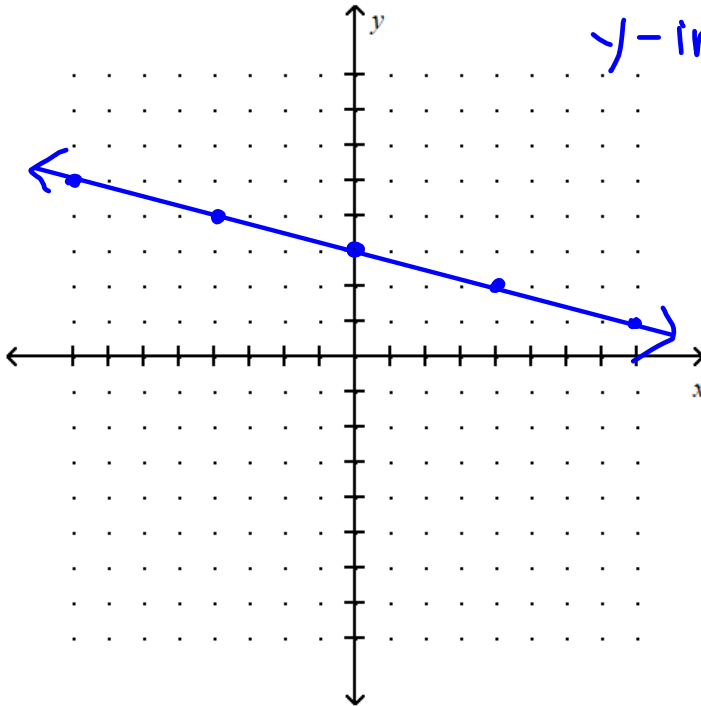6. Find the slope and y-intercept of the line with the equation $4x - 3y = 36$.

$$4x - 3y = 36$$
$$-4x \qquad\qquad -4x$$
$$\frac{-3y}{-3} = \frac{-4x}{-3} + \frac{36}{-3}$$
$$y = \frac{4}{3}x - 12$$

$$\text{slope} = \frac{4}{3} \qquad \text{y-int} = -12$$

7. Graph the line $y = -\dfrac{1}{4}x + 3$.

$m = -\dfrac{1}{4}$

$y\text{-int} = 3$

8. Graph the linear equation $4x - 2y = -8$ **by finding x- and y-intercepts.**

x-int : set $y=0$

$4x - 2(0) = -8$

$\dfrac{4x}{4} = \dfrac{-8}{4}$
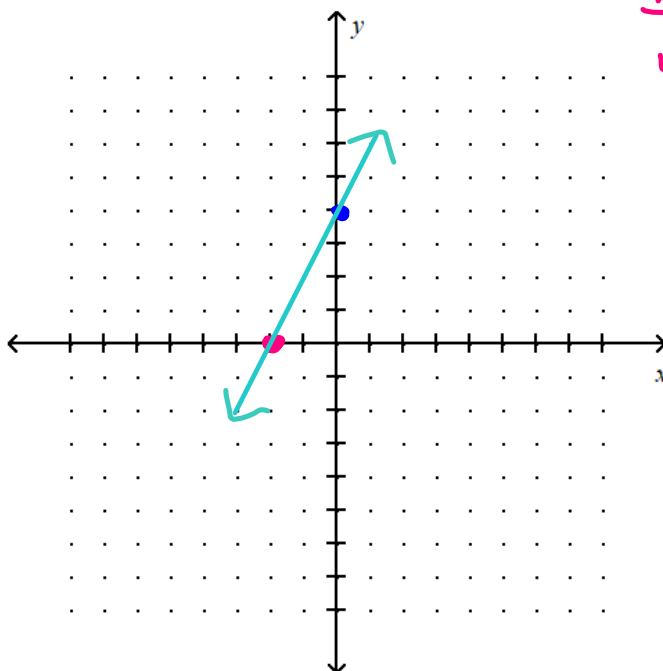
$x = -2$

y-int: set $x = 0$

$4(0) - 2y = -8$

$\dfrac{-2y}{-2} = \dfrac{-8}{-2}$

$y = 4$

9. Tell whether **Line 1** and **Line 2** are *parallel, perpendicular,* or *neither.*
    Line 1 passes through $(10, 7)$ and $(13, 9)$
    Line 2 passes through $(-4, 3)$ and $(-1, 5)$

$$m = \frac{9 - 7}{13 - 10}$$

$$m = \frac{5 - 3}{-1 + -4}$$

$$m = \frac{2}{3}$$

$$m = \frac{2}{3}$$

same slope
↓
PARALLEL

$$m = -4$$

10. Which slope-intercept equation represents a line that passes through the point $(1, -5)$ and is parallel to the line
    $y = -4x - 5$?

    same slope

    a. $y = 4x + 1$
    b. $y = -4x - 1$
    c. $y = -\frac{1}{4}x - 5$
    d. $y = -4x - 21$

$$y - y_1 = m(x - x_1)$$

$$y - -5 = -4(x - 1)$$

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

$$\underline{ -5 -5}$$

$$y = -4x - 1$$

y-int (starting point)

slope

11. Write an equation to model the following situation.
     An amusement park charges $10.00 admission and $2.00 per ride.

a. $y = 2x + 10$ b. $y = 10x - 2$ c. $y = 10x + 2$ d. $y = -2x + 10$

y-int (starting point)

slope = -2.50

12. Write an equation to model the following situation.
     A candle is 6 in. tall and burns at a rate of 2.50 in./h.

a. $y = 6x + 2.5$ b. $y = -2.5x + 6$ c. $y = 6x - 2.5$ d. $y = 2.5x + 6$

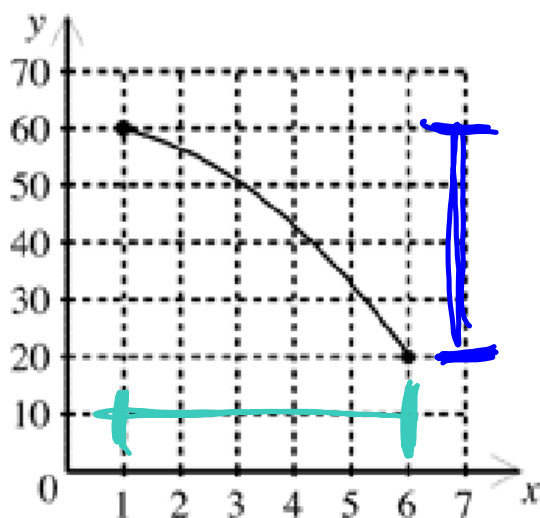13. Write the equation of the line, in slope-intercept form, that passes through the point $(3, 5)$ and has slope -2.

$$y - y_1 = m(x - x_1)$$
$$y - 5 = -2(x - 3)$$
$$y - 5 = -2x + 6$$
$$\underline{+5 \qquad\qquad +5}$$
$$\boxed{y = -2x + 11}$$

14. Find the slope-intercept equation of the line passing through the points $(-3, -5)$ and $(6, -2)$.

$$x_1 \ y_1$$

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-2 + 5}{6 + 3} = \frac{3}{9} = \frac{1}{3} = m$$

$$y - y_1 = m(x - x_1)$$
$$y + 5 = \frac{1}{3}(x + 3)$$
$$y + 5 = \frac{1}{3}x + 1$$
$$\underline{-5 \qquad\qquad -5}$$
$$\boxed{y = \frac{1}{3}x - 4}$$

15. What is the domain and range of the function in the graph?

$$D: 1 \leq x \leq 6$$

$$R: 20 \leq y \leq 60$$