

7.2 Linear Functions

Name _____

Determine if the function is increasing (going from left to right) or decreasing.

1. $y = 3x$ increasing

2. $y = -4x$ decreasing

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

4. $y = 3 - 2x$ decreasing

Find the slope of the line through each pair of points.

5. $(-1, 2)$ and $(2, -6)$

$$-\frac{8}{3}$$

6. $(-3, 1)$ and $(-1, -5)$

$$\frac{-5-1}{-1-(-3)} = \frac{-6}{2} = -3$$

Determine the slope and y-intercept for each equation.

7. $y = 2x - 4$

slope 2
y-int -4

8. $2x + 3y = 2$

slope $-\frac{2}{3}$
y-int $\frac{2}{3}$

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

9. $-x + 3y + 2 = 0$

slope $\frac{1}{3}$
y-int $-\frac{2}{3}$

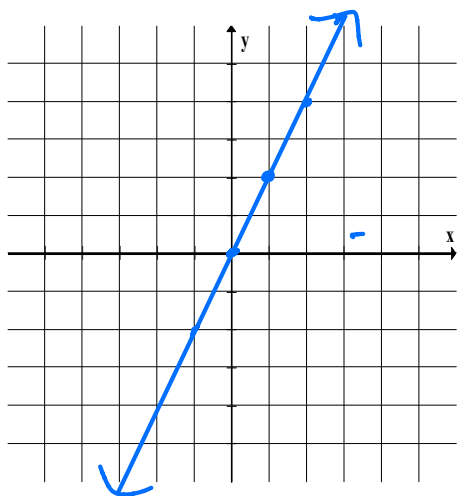
10. $-x - 3y = 8$

slope $-\frac{1}{3}$
y-int $-\frac{8}{3}$

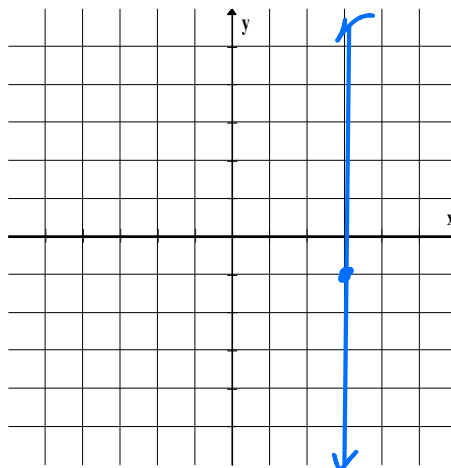
$$-3y = x + 8$$
$$y = -\frac{1}{3}x - \frac{8}{3}$$

Draw the line that contains the given point P and has slope m .

11. $(1, 2)$ and $m = 2$



12. $(3, -1)$ and $m = \text{undefined}$

Write an equation of the line passing through the given point and having slope m .

13. $(-1, 0)$ and $m = \frac{2}{3}$

$$y = \frac{2}{3}x + \frac{2}{3}$$

14. $(-1, 3)$ and $m = 10$

$$y - 3 = 10(x + 1)$$

$$y = 10x + 10 + 3$$

$$y = 10x + 13$$

15. Write an equation of the line with slope, $m = -\frac{3}{4}$, and y-intercept, $b = -3$.

$$y = -\frac{3}{4}x - 3$$

Write an equation of both the vertical and horizontal line through the given point.

16. $(-2, 3)$

$$\text{vert } x = -2$$

$$\text{horiz } y = 3$$

17. $(0, -2)$

$$\text{vert } x = 0$$

$$\text{horiz } y = -2$$

Write an equation of the line through the given pair of points.

18. $(-1, 0)$ and $(3, 1)$

Slope

$$\frac{1-0}{3-(-1)} = \frac{1}{4}$$

$$y - 0 = \frac{1}{4}(x + 1)$$

$$y = \frac{1}{4}x + \frac{1}{4}$$

19. $(8, 1)$ and $(8, -4)$

$$x = 8$$

20. $(1, 1)$ and $(0, 2)$

$$\frac{2-1}{0-1} = -1$$

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

$$y - 1 = -x + 1$$

$$y = -x + 2$$

21. $(0, 300)$ and $(10, 365)$

$$y = \frac{13}{2}x + 300$$