

5-1 Rate of Change and Slope

Find the slope of the line that passes through each pair of points:

1. $(-3, 4)$ and $(5, -2)$

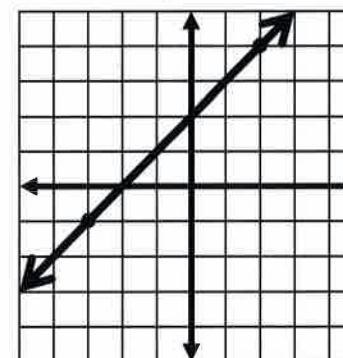
$$m = \frac{-2-4}{5-(-3)} = \frac{-6}{8} = \boxed{-\frac{3}{4}}$$

2. $(-3, -2)$ and $(-3, 4)$

$$m = \frac{4-(-2)}{-3-(-3)} = \frac{6}{0} = \boxed{\text{undefined}}$$

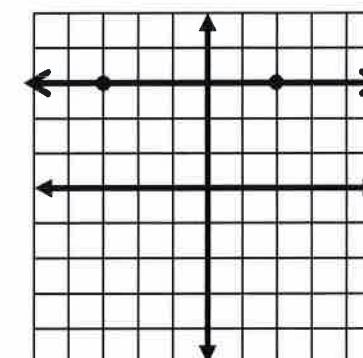
Find the slope of each line:

3.



Slope = 1

4.



Slope = 0

5. These points lie on the same line: $(-2, 8)$ and $(1, y)$. If the slope of the line is -3 , find y .

$$\frac{y-8}{1-(-2)} = -3$$

$$y-8 = -3(3)$$

$$y-8 = -9$$

$$y = -1$$

5-3A Slope-Intercept Form

1. Find the slope: $y = -\frac{x}{3} - \frac{5}{3}$

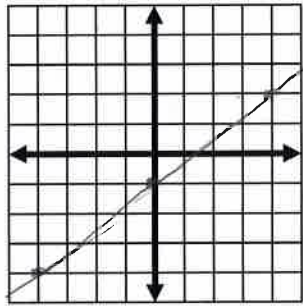
$$m = -\frac{1}{3}$$

2. Write the equation of the line with slope $\frac{1}{2}$ and y-intercept $-\frac{3}{2}$.

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

Graph the linear equation:

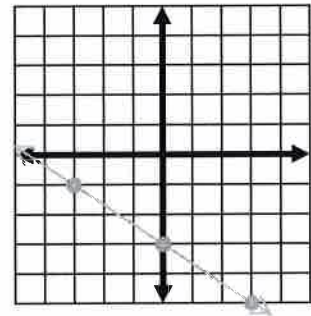
2. $y = \frac{3}{4}x - 1$



Write the linear equation from the graph:

4.

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



5. Write the equation of the line with slope $\frac{1}{2}$ passing through $(-6, 4)$

$$y = \frac{1}{2}x + B$$

$$4 = \frac{1}{2}(-6) + B$$

$$4 = -3 + B$$

$$7 = B$$

$$y = \frac{1}{2}x + 7$$

5-3B More Slope-Intercept Form

In 1-4, Write the equation of the line described, in slope-intercept form:

1. $y - 4 = \frac{1}{2}(x - 10)$

$y - 4 = \frac{1}{2}x - 5$

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

2. $-2x - 7y = 28$

$-7y = 2x + 28$

$y = -\frac{2}{7}x - 4$

3. slope is -1 , passing through $(2, -3)$

$-3 = -1(2) + B$

$-3 = -2 + B$

$-1 = B$

$y = -x - 1$

4. passing through $(-1, 6)$ and $(1, 2)$

$m = \frac{2-6}{1-(-1)} = \frac{-4}{2} = -2$

$2 = -2(1) + B$

$2 = -2 + B$

$4 = B$

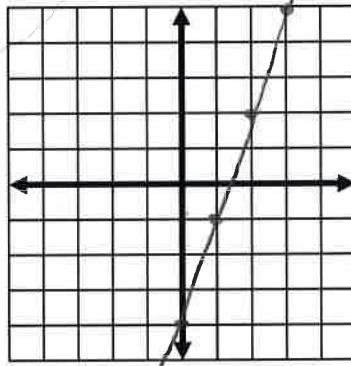
$y = -2x + 4$

→

5. Graph the line $3x - y = 4$

$-y = -3x + 4$

$y = 3x - 4$



5-6 Parallel & Perpendicular Lines

For 1-5, write the equation of the line described, in slope-intercept form:

1. parallel to
- $y = 2x - 7$
- and passing through
- $(-3, -1)$

$$y = 2x + B$$

$$-1 = 2(-3) + B$$

$$-1 = -6 + B$$

$$5 = B$$

$$y = 2x + 5$$

2. parallel to
- $y = \frac{5}{3}x - 3$
- and passing through
- $(-3, 4)$

$$y = \frac{5}{3}x + B$$

$$4 = \frac{5}{3}\left(\frac{-3}{1}\right) + B$$

$$4 = -5 + B$$

$$9 = B$$

$$y = \frac{5}{3}x + 9$$

3. perpendicular to
- $y = -3x - 2$
- passing through
- $(-10, 3)$
- .

$$y = \frac{1}{2}x + B$$

$$3 = \frac{1}{2}(-10) + B$$

$$3 = -5 + B$$

$$8 = B$$

$$y = \frac{1}{2}x + 8$$

4. perpendicular to
- $y = -\frac{3}{5}x + 4$
- passing through
- $(-9, -1)$
- .

$$y = \frac{5}{3}x + B$$

$$-1 = \frac{5}{3}\left(\frac{-9}{1}\right) + B$$

$$-1 = -15 + B$$

$$14 = B$$

$$y = \frac{5}{3}x + 14$$

5. Write the equation of a line parallel to
- $-4x + 5y = -20$
- , passing through
- $(0, 2)$

$$5y = 4x - 20$$

$$y = \frac{4}{5}x - 4$$

$$y = \frac{4}{5}x + B$$

$$2 = \frac{4}{5}\left(\frac{10}{1}\right) + B$$

$$2 = 8 + B$$

$$-6 = B$$

$$y = \frac{4}{5}x - 6$$

