

Homework Quiz

Rules for Homework Quiz:

No Cheating

No Talking until the last quiz is picked up

Name

Using the given information, write an equations of a line that goes through the points (3, -3) and (-1, 5) in both point slope form and slope intercept form. Then graph the line.

$$(3^{\textcircled{1}}, -3) \text{ and } (-1^{\textcircled{2}}, 5)$$

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{5 - (-3)}{-1 - 3} = \frac{8}{-4} = -2 = m$$

Point Slope

$$y + 3 = -2(x - 3)$$

or

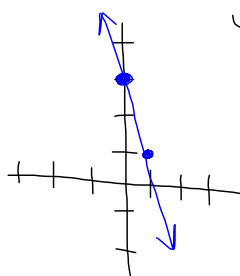
$$y - 5 = -2(x + 1)$$

Slope Intercept

$$y + 3 = -2x + 6$$

$$\begin{array}{r} -3 \\ -3 \end{array}$$

$$y = -2x + 3$$



Section 6.6
Parallel and
Perpendicular Lines



If lines are parallel, how do the slopes compare?

Slopes are the same

Property**Slopes of Parallel Lines**

Nonvertical lines are parallel if they have the same slope and different y-intercepts. *Any* two vertical lines are parallel.

Example The equations $y = \frac{2}{3}x + 1$ and $y = \frac{2}{3}x - 3$ have the same slope, $\frac{2}{3}$, and different y-intercepts. The graphs of the two equations are parallel.



If two lines are perpendicular, how do the slopes compare?

(+/-) Slopes
 opposite Reciprocal $\rightarrow m=3 \rightarrow -\frac{1}{3}$
 $m=\frac{3}{4} \rightarrow \frac{4}{3}$
 if $m=2 \perp m=-\frac{1}{2}$

Property**Slopes of Perpendicular Lines**

Two lines are perpendicular if the product of their slopes is -1 . A vertical and a horizontal line are also perpendicular.

Example The slope of $y = -\frac{1}{4}x - 1$ is $-\frac{1}{4}$. The slope of $y = 4x + 2$ is 4 .
 Since $-\frac{1}{4} \cdot 4 = -1$, the graphs of the two equations are perpendicular.

Find the slope of a line parallel to the given equation.

$$3x + 4y = 12$$

$$\begin{array}{r} -3x \qquad \qquad \qquad -3x \\ \hline 4y = 12 - 3x \\ \hline \end{array}$$

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

→ slope

$$\begin{array}{l} m = -\frac{3}{4} \\ \parallel m = -\frac{3}{4} \end{array}$$

Are the graphs of the lines parallel? Explain.

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

$$5x - 10y = 15$$



Find the slope of a line perpendicular to the given equation.

$$2x + 3y = 5$$

$$\frac{-2x}{3} = \frac{-2x}{3} + \frac{5}{3}$$

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

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

→ slope

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

Homework:

p. 346 (1 - ¹²~~18~~, 19 - ²⁴~~28~~,
32 - 37, 41, 42)



Attachments

Slopes.gsp