

## Parallel and Perpendicular Lines Assignment

Write an equation in slope-intercept form of the line that passes through the given point and is parallel to the graph of the given equation.

1.  $(3, 2)$ ;  $y = 2x + 3$

2.  $(-1, 6)$ ;  $y = 9x - 5$

3.  $(0, 0)$ ;  $y = -\frac{1}{2}x + 5$

4.  $(5, 5)$ ;  $y = \frac{3}{5}x - 15$

Write an equation in slope-intercept form of the line that passes through the given point and is perpendicular to the graph of the given equation.

1.  $(2, 1)$ ;  $y = 2x + 1$

2.  $(-2, -14)$ ;  $y = -\frac{1}{7}x - 5$

**Parallel and Perpendicular Lines** Assignment

3.  $(0, 1)$ ;  $y = -x - 1$

4.  $(-2, 1)$ ;  $y = \frac{1}{4}x - 5$

Determine whether the graphs of the given equations are parallel or perpendicular or neither. Give reason for your answer.

1.  $y = 3x + 2$

$y - 3x = -4$

2.  $y - x = 10$

$y = -x - 4$

3.  $y = \frac{4}{5}x - 11$

$y = -\frac{4}{5}x + 11$

## Parallel and Perpendicular Lines Assignment

Write an equation in slope-intercept form of the line that passes through the given point and is parallel to the graph of the given equation.

1.  $(3, 2); y = 2x + 3$

Slope of the parallel line  $m = 2$

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

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

$$y = 2x - 4$$

2.  $(-1, 6); y = 9x - 5$

Slope of the parallel line  $m = 9$

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

$$y - 6 = 9(x - (-1))$$

$$y = 9x + 15$$

3.  $(0, 0); y = -\frac{1}{2}x + 5$

Slope of the parallel line  $m = -\frac{1}{2}$

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

$$y - 0 = -\frac{1}{2}(x - 0)$$

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

4.  $(5, 5); y = \frac{3}{5}x - 15$

Slope of the parallel line  $m = \frac{3}{5}$

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

$$y - 5 = \frac{3}{5}(x - 5)$$

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

Write an equation in slope-intercept form of the line that passes through the given point and is perpendicular to the graph of the given equation.

1.  $(2, 1); y = 2x + 1$

Slope of the perpendicular line  $m = -\frac{1}{2}$

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

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

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

2.  $(-2, -14); y = -\frac{1}{7}x - 5$

Slope of the perpendicular line  $m = 7$

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

$$y - (-14) = 7(x - (-2))$$

$$y = 7x$$

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3.  $(0, 1); y = -x - 1$

Slope of the perpendicular line  $m = 1$ 

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

$$y - 1 = 1(x - 0)$$

$$y = x + 1$$

4.  $(-2, 1); y = \frac{1}{4}x - 5$

Slope of the perpendicular line  $m = -4$ 

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

$$y - 1 = -4(x - (-2))$$

$$y = -4x - 7$$

Determine whether the graphs of the given equations are parallel or perpendicular or neither. Give reason for your answer.

1.  $y = 3x + 2$

$$y - 3x = -4$$

The graphs of the two lines are parallel since the slope of both lines is same i.e. 3 and the y-intercept is different.

2.  $y - x = 10$

$$y = -x - 4$$

The graphs of the two lines are perpendicular since the slope of both lines are reciprocal of each other and their product is  $-1$ .

3.  $y = \frac{4}{5}x - 11$

$$y = -\frac{4}{5}x + 11$$

The graphs of the two lines are neither perpendicular nor parallel since the slopes are neither equal nor their product is equal to  $-1$ .