

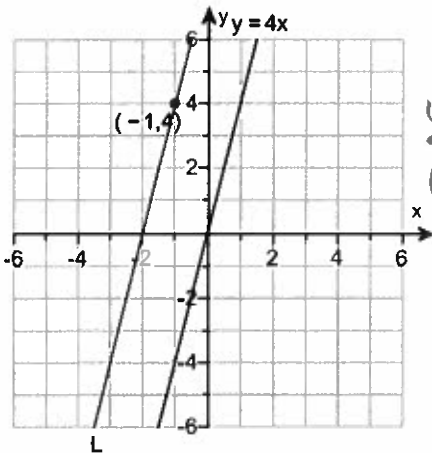
Student: _____
Date: _____

Instructor: Andreas Lazari
Course: Math1111-Summer2018

Assignment: Section 2.4 Homework

1. Write an equation for line L in point-slope form and slope-intercept form.
L is parallel to $y = 4x$.

Two parallel lines have the same slopes $m_1 = m_2$



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

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

Write an equation for line L in point-slope form.

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

(Simplify your answer. Use integers or fractions for any numbers in the equation.)

Write an equation for line L in slope-intercept form.

$$y = 4x + 8$$

(Simplify your answer. Use integers or fractions for any numbers in the equation.)

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

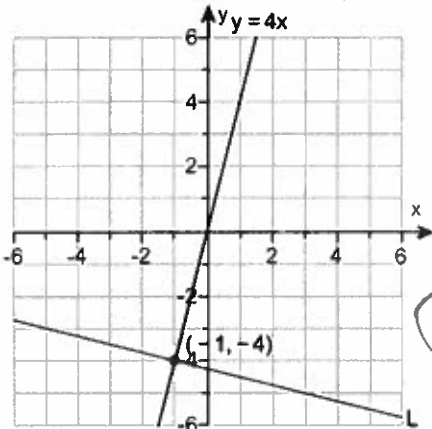
$$y - 4 = 4x + 4$$

$$y = 4x + 4 + 4$$

$$y = 4x + 8$$

2. Write an equation for line L in point-slope form and slope-intercept form.
L is perpendicular to $y = 4x$.

Two perpendicular lines have $m_1 = -\frac{1}{m_2}$.



$$\Rightarrow m_1 = -\frac{1}{4}$$

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

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

$$\Rightarrow y + 4 = -\frac{1}{4}x - \frac{1}{4} \Rightarrow y = -\frac{1}{4}x - \frac{1}{4} - 4 \Rightarrow y = -\frac{1}{4}x - \frac{17}{4}$$

Write an equation for line L in point-slope form.

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

(Simplify your answer. Use integers or fractions for any numbers in the equation.)

Write an equation for line L in slope-intercept form.

$$y = -\frac{1}{4}x - \frac{17}{4}$$

(Simplify your answer. Use integers or fractions for any numbers in the equation.)

3. Use the given conditions to write an equation for the line in point-slope form and in slope-intercept form.

Passing through $(-3, -3)$ and parallel to the line whose equation is $y = -4x + 1 \Rightarrow m = -4$.

Write an equation for the line in point-slope form.

$$y + 3 = -4(x + 3)$$

(Simplify your answer. Use integers or fractions for any numbers in the equation.)

Write an equation for the line in slope-intercept form.

$$y = -4x - 15$$

(Simplify your answer. Use integers or fractions for any numbers in the equation.)

$$y - (-3) = -4(x - (-3))$$

$$y + 3 = -4(x + 3)$$

$$\Rightarrow y + 3 = -4x - 12$$

$$y = -4x - 12 - 3$$

$$y = -4x - 15$$

4. Use the given conditions to write an equation for the line in point-slope form and in slope-intercept form.

Passing through $(2, -3)$ and perpendicular to the line whose equation is $y = \frac{1}{5}x + 2$ $m_1 = -\frac{1}{\frac{1}{5}} = -1 \cdot \frac{5}{1} = -5$

Write an equation for the line in point-slope form.

$$y + 3 = -5(x - 2)$$

(Simplify your answer. Use integers or fractions for any numbers in the equation.)

Write an equation for the line in slope-intercept form.

$$y = -5x + 7$$

(Simplify your answer. Use integers or fractions for any numbers in the equation.)

$$y - (-3) = -5(x - 2)$$

$$y + 3 = -5(x - 2)$$

$$\Rightarrow y + 3 = -5x + 10$$

$$y = -5x + 10 - 3$$

$$y = -5x + 7$$

5. Use the given conditions to write an equation for the line in point-slope form and general form.

Passing through $(-3, 9)$ and parallel to the line whose equation is $6x - 5y - 4 = 0 \Rightarrow 5y = 6x - 4 \Rightarrow y = \frac{6}{5}x - \frac{4}{5}$
 $m = \frac{6}{5}$

The equation of the line in point-slope form is $y - 9 = \frac{6}{5}(x + 3)$

(Type an equation. Use integers or fractions for any numbers in the equation.)

$$y - 9 = \frac{6}{5}(x - (-3)) \Rightarrow y - 9 = \frac{6}{5}(x + 3)$$

The equation of the line in general form is $6x - 5y + 63 = 0$.

(Type an expression using x and y as the variables. Simplify your answer. Use integers or fractions for any numbers in the expression.)

$$\Rightarrow 5(y - 9) = 5\left(\frac{6}{5}(x + 3)\right)$$

$$5y - 45 = 6x + 18 \Rightarrow 6x - 5y + 18 + 45 = 0$$

$$6x - 5y + 63 = 0$$

6. Use the given conditions to write an equation for the line in point-slope form and general form.

Passing through $(2, -5)$ and perpendicular to the line whose equation is $x - 5y - 6 = 0 \Rightarrow 5y = x - 6 \Rightarrow y = \frac{1}{5}x - \frac{6}{5}$

The equation of the line in point-slope form is $y + 5 = -5(x - 2)$

(Type an equation. Use integers or fractions for any numbers in the equation.)

The equation of the line in general form is $5x + y - 5 = 0$.

(Type an expression using x and y as the variables. Simplify your answer. Use integers or fractions for any numbers in the expression.)

$$m = -\frac{1}{\frac{1}{5}} = -5$$

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

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

$$y + 5 = -5x + 10 \Rightarrow 5x + y - 5 = 0$$

7. Find the average rate of change of the function $f(x) = 8x$ from $x_1 = 0$ to $x_2 = 9$. Average rate of change:

The average rate of change is 8. (Simplify your answer.)

$$\frac{f(x_2) - f(x_1)}{x_2 - x_1} = \frac{f(9) - f(0)}{9 - 0}$$

$$= \frac{72 - 0}{9 - 0} = 8$$

8. Find the average rate of change of the function $f(x) = x^2 + 3x$ from $x_1 = 6$ to $x_2 = 7$.

The average rate of change is 16. (Simplify your answer.)

$$\frac{f(7) - f(6)}{7 - 6} = \frac{70 - 54}{1} = 16$$

9. Write the slope-intercept equation of the function f whose graph satisfies the given conditions.

The graph of f passes through $(-4, 4)$ and is perpendicular to the line that has an x -intercept of 3 and a y -intercept of -6 .

The equation of the function is $y = -\frac{1}{2}x + 7$.
 (Use integers or fractions for any numbers in the equation.)

$$(3, 0)$$

$$(0, -6)$$

$$m_1 = \frac{-6 - 0}{0 - 3} = \frac{-6}{-3} = +2$$

$$m_2 = -\frac{1}{2}$$

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

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

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

$$1. y - 4 = 4(x + 1)$$

$$y = 4x + 8$$

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

$$y = -\frac{1}{4}x - \frac{17}{4}$$

$$3. y + 3 = -4(x + 3)$$

$$y = -4x - 15$$

$$4. y + 3 = -5(x - 2)$$

$$y = -5x + 7$$

$$5. y - 9 = \frac{6}{5}(x + 3)$$

$$6x - 5y + 63$$

$$6. y + 5 = -5(x - 2)$$

$$5x + y - 5$$

$$7. 8$$

$$8. 16$$

$$9. f(x) = -\frac{1}{2}x + 2$$
