

Parallel, Perpendicular, Horizontal and Vertical Lines

Ex. 1. Determine whether the lines are parallel, perpendicular, or neither.

a) $m = \frac{1}{1}$ $m = -\frac{1}{1}$ Perpendicular

b) $m = \frac{-4}{1}$ $m = \frac{1}{4}$ perpendicular

c) $m = \frac{3}{9} \div \frac{3}{3} = \frac{1}{3}$ $m = \frac{1}{3}$ parallel

Ex. 2. State the slope of a line that is:

a) parallel to each line

b) perpendicular to each line

a) $y = 2x - 1$

a) $m = 2$

b) $m = -\frac{1}{2}$

b) $y = \frac{3}{4}x$

a) $m = \frac{3}{4}$

b) $m = -\frac{4}{3}$

Ex. 3: Given the coordinates of the following points, determine whether each pair of lines is parallel, perpendicular, or neither.

A (3, 2)

 x_1, y_1

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

$$x_2 - x_1$$

B (6, 4)

 x_2, y_2

C (-8, -2)

 x_1, y_1

D (-2, 2)

 x_2, y_2

a. AB and CD

$$m = \frac{4 - 2}{6 - 3}$$

$$= \frac{2}{3}$$

$\therefore$ They are
Parallel

$$m = \frac{2 - (-2)}{-2 - (-8)}$$

$$= \frac{4}{6} = \frac{2}{3}$$

Ex. 4: Determine the equation for each line.

a) A line parallel to $y = \frac{5}{3}x + 4$, passing through (1,2).

$$m = \frac{5}{3} \quad y = mx + b$$

$$2 = \frac{5}{3}(1) + b$$

$$2 = \frac{5}{3} + b \quad // - \frac{5}{3}$$

$$\frac{2 \times 3}{1 \times 3} - \frac{5}{3} = b$$

$$\frac{6}{3} - \frac{5}{3} = b$$

$$b = \frac{1}{3}$$

$$\therefore y = \frac{5}{3}x + \frac{1}{3}$$

b) A line parallel to $y = 4x + 2$ and has a y-intercept of 9

$$y = 4x + 9$$

$$b = 9 \quad m = 4$$

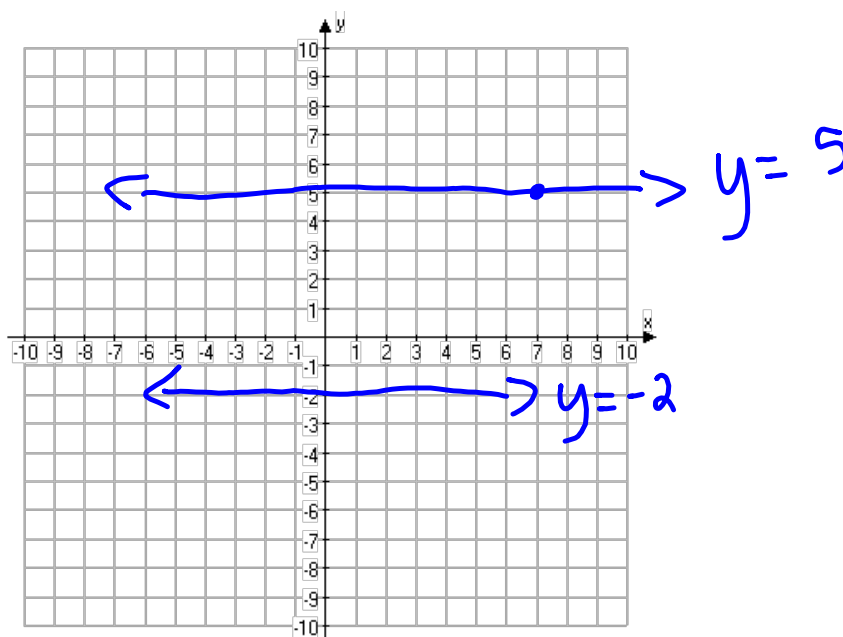
- c) A line that is parallel to $y = -2$ and passes through the point $(7, 5)$

HINT:

1. Sketch the graph of $y = -2$
2. Plot the point $(7, 5)$
3. Draw a line that is parallel to $y = -2$ and passes through $(7, 5)$

***The line should still be horizontal!**

4. Write the equation of the horizontal line

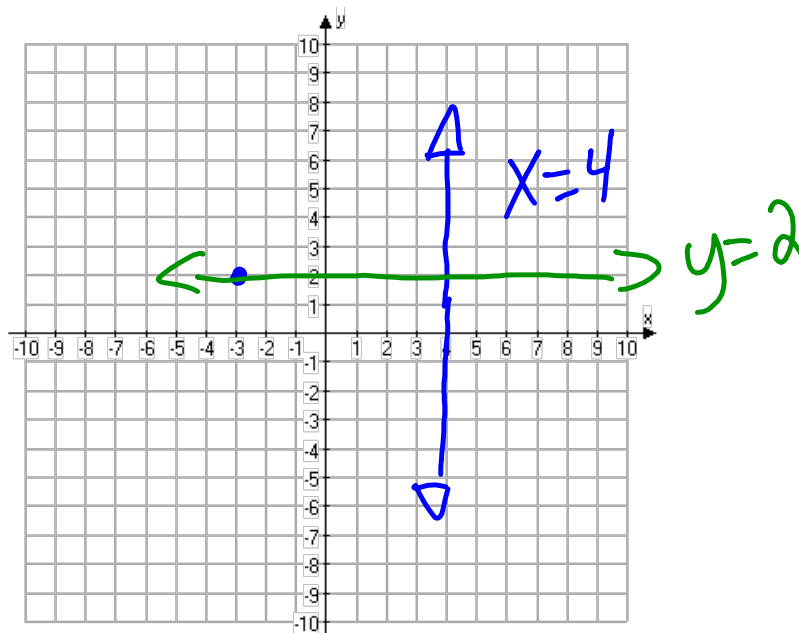


- d) A line that is perpendicular to $x = 4$ and passes through the point $(-3, 2)$

HINT: 1. Sketch the graph of $x = 4$
2. Plot the point $(-3, 2)$
3. Draw a line that is perpendicular to $x=4$ and passes through $(-3, 2)$

➡ The line should be horizontal!

4. Write the equation of the horizontal line



HOMEWORK:

Handout from yesterday: Parallel and Perpendicular,
Horizontal and Vertical Lines

Part A #4, 6

Part D #24, 25, 26

Part B #12, 14

Part E # 32, 34, 36

Hand Assignments in from Wednesday!

Have a great March Break!!!