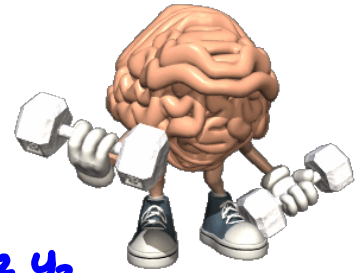


Warm Up



1) A line that passes through $(3, 2)$ and $(5, 9)$

a) Write an equation in point slope form:

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

$$= \frac{(9) - (2)}{(5) - (3)}$$

$$= \frac{7}{2}$$

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

$$y - 2 = \frac{7}{2}(x - 3)$$

$$y - 9 = \frac{7}{2}(x - 5)$$

b) Write an equation in slope intercept form:

$$2[y - 2] = \frac{7}{2}(x - 3)$$

$$2y - 4 = 7(x - 3)$$

$$2y - 4 = 7x - 21 + 4$$

$$\frac{2y}{2} = \frac{7x}{2} - \frac{17}{2}$$

$$y = \frac{7}{2}x - \frac{17}{2}$$

Almost General

$$2y - 4 = 7x - 21 + 4$$

$$2y = 7x - 17$$

$$0 = 7x - 2y - 17$$

c) Write an equation in General form:

d) State the x and y intercept

Chapter 6 Review

Part 1:

Find the slope of the line through each of the points.

a) (6,6) (6,-11)

b) (10, -14), (-2, 2)

c) (-7,-6), (-20,-1)

d) (-20,14), (11, -18)

Part 2:

Write the following equations in slope-intercept form, and then state the slope, y-intercept and x-intercept.

a) $y = \frac{2x}{5} - 5$

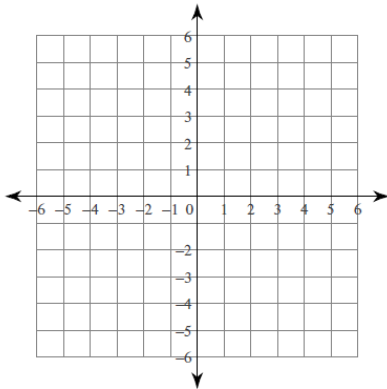
b) $y = -3x - 5$

c) $y = 6x - 3$

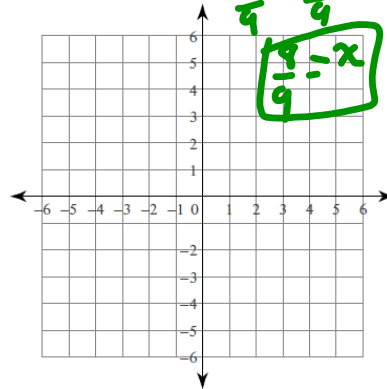
d) $y = \frac{9x}{2} - 4$

Part 3: Graph the following

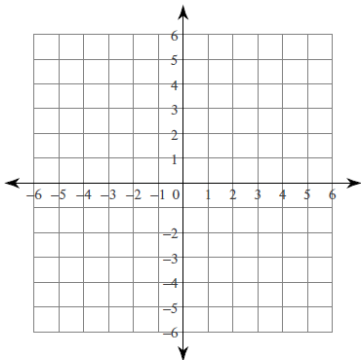
a) $y = \frac{6}{5}x - 2$



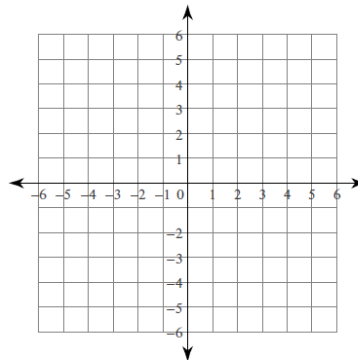
b) $y = \frac{4}{3}x + 1$



c) $9x + y = 5$



d) $2x + y = 5$



Part 4:

Write the general form of the equation of each line given

a) Slope = $-\frac{3}{5}$, y-intercept = 5

b) Slope = 9, y-intercept = 4

c) slope = -2, x-intercept = -6

d) slope = $\frac{1}{2}$, x-intercept = -6

Part 6:

Write the equation of a line in point slope form and in then slope intercept form for each of the following:

a) slope = -5
point= (-4,9)

b) slope = -2/3
point= (5, -1)

c) point= (-6, -1) Point= (2,5)

Part 7:

Which of the following are perpendicular or parallel?

a) $y = 3x + 6$, $y = 3x - 3$

b) $y = \frac{-1}{2}x - 5$, $y = 2x + 5$

c) (5,4) (11, -2) with (7,6) (3,2)

d) (7,6) (3,2) with (7,-3) (11,1)

Part 8:

Write the equation of a line, in point slope form for the following :

a)through: (2, 0), parallel to $y = \frac{2}{3}x$

b)through: (-2, 4), parallel to $y = -\frac{3}{2}x + 3$

c)through: (2, 4), perp. to $y = -\frac{2}{7}x - 5$

d)through: (5, 0), perp. to $y = -x + 5$

Part 9:

Write the equation of a line for the following:

a) Find the equation of a line that passes through (-2,4) and has a slope perpendicular to $y = 2x + 3$.

b) Find the equation of a line that passes through the points (1,-3) and (-5,2)

c) Find the equation of a line that passes through the points (2,5) and (-11,-3)

d) Find the equation of a line that has the same x-intercept as this equation $6x + 12 = 3y$, and also passes through the point (3,-5).

Part 10:

Determine the distance and midpoint for the following lines

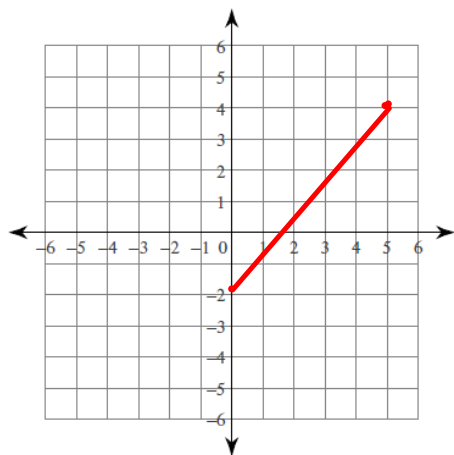
a) (-4,3) (5,6)

b) (0,-9) (-7, 2)

Part 3:
Sketch the graph of the following lines

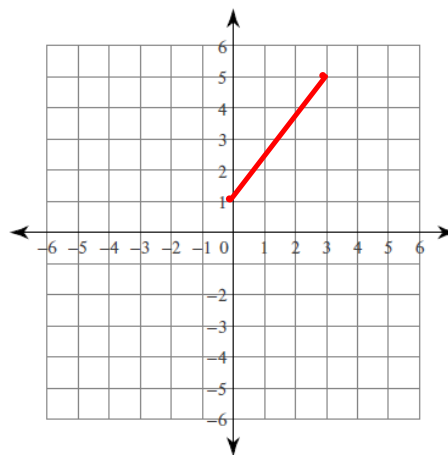
a)

1) $y = \frac{6}{5}x - 2$



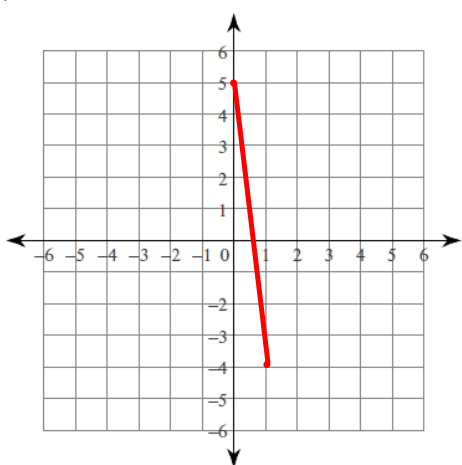
b)

2) $y = \frac{4}{3}x + 1$



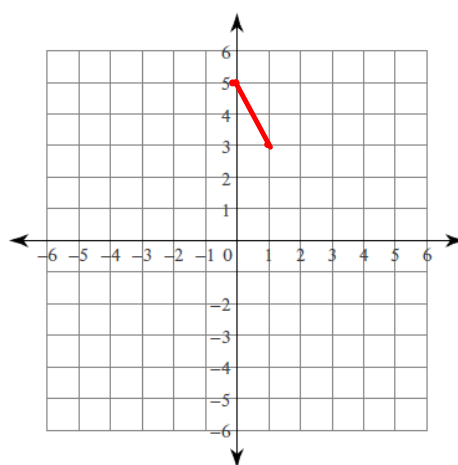
$$y = -9x + 5$$

c) $9x + y = 5$



d) $2x + y = 5$

$$y = -2x + 5$$



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

Slope intercept form

$$y = mx + b$$

Point slope form

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

General form

$$Ax + By + c = 0$$

$$MP(x, y) = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$$

SLOPE

$$\text{Slope} = m = \frac{\text{rise}}{\text{run}} = \frac{\Delta y}{\Delta x} = \frac{y_2 - y_1}{x_2 - x_1}$$

Types of questions:

1) What is the slope between (2,3) and (7,-4)?

•

2) Using the points below, find the slope of each line(3,5) (-3,-5)

Finding Intercepts

X - Intercept - is where the graph crosses the x-axis ($y = 0$)

Y- Intercept - is where the graph crosses the y-axis ($x = 0$)

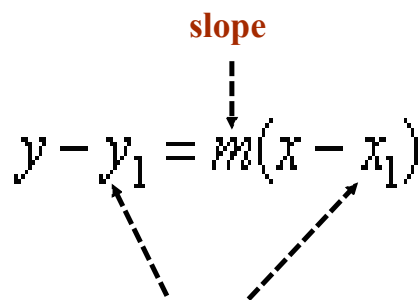
Example: What are the x and y intercepts for

a) $2x + 3y = 12$

b) $x - 3y = 9$

Point - Slope Form

You can also find the equation of a line if you are given a point and the slope of the line. In order to do this you use the formula:

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


The x and y values from the given point

1) Find the equation of a line that passes through (-3,4) and has the same slope as $y = 3x + 2$.

2) Find the equation of a line that passes through the points (0,5) and (-2,1)

Parallel Lines

More on Slope...

Lines that are **parallel** will have the same slope.

Remember $y = mx + b$ $m = \text{slope}$

The lines $y = 3x + 1$ and $y = 3x - 2$ are parallel

You can see this when you graph it...

Perpendicular Lines

When two lines are perpendicular, their slopes are the opposite reciprocal of one another.

Example...

The lines $y = 2x + 1$ and $y = -1/2x + 1$ are perpendicular.

Again, you can see this when you graph the two lines on a coordinate plane.

Example:

What is the slope of each pair of lines? Are they parallel or perpendicular?

a) $y = 2x - 4$
 $y = 2x - 8$

b) $y = 4$
 $y = 9$

c) $y = 4x$
 $y = -1/4 x$

d) $x = 4$
 $y = 4$

Rearranging Equations

Anytime we have looked at equations of lines that have all been in the form $y = mx + b$. However, there are some cases in which an equation is written in a different form and we have to rearrange it in order to put it in $y = mx + b$ form.

For example: Write $3x + y = 7$ in the form $y = mx + b$

Rearrange the following equations in the form $y = mx + b$

a) $2x + y = 4$

b) $3x - 3y = 9$

c) $x + 2y - 12 = 0$

d) $y + 4 = 10x$

e) $2y = 50x - 100$

f) $2x = -y + 13$

Graphing

Three ways to do it

1. Using a Table of Values
2. Using $y = mx + b$
3. Using intercepts

