Calculate the slope for the following:

①

(0,3)

3

Rise

(-2,0)

-2 Run

$m = \frac{3}{2}$
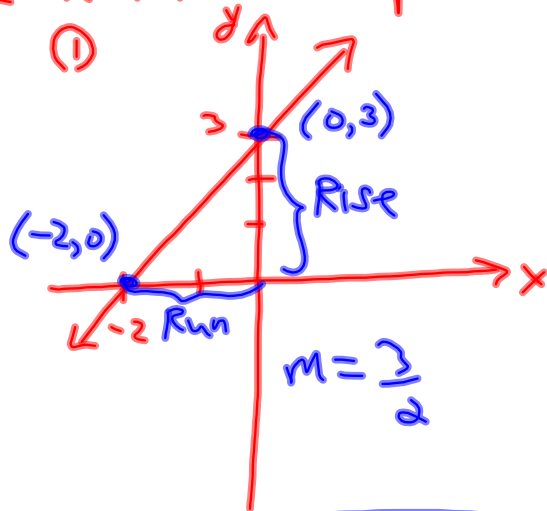
② line through

$(2,-6) \ \text{\&} \ (-7,-3)$

$m = \dfrac{-3-(-6)}{-7-2}$

$m = \dfrac{3}{-9} = -\dfrac{1}{3}$

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

$m = \dfrac{3-0}{0-(-2)}$

$m = \dfrac{3}{2}$

Warm Up...

Find the value for x if the line segment joining the points $(x, 0)$ and $(-2, 4)$ has a slope value of $\frac{2}{3}$

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

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

$$-\frac{2}{3} = \frac{0 - 4}{x - (-2)}$$

$$-\frac{2}{3} = \frac{-4}{x + 2}$$

$$-\frac{2}{3} = \frac{-4}{x + 2} \quad \xrightarrow{x2}$$

$$\frac{3}{x} \cancel{\times} \frac{7}{4} \quad (4x) \quad (\underline{\text{4}}) \longleftarrow \text{Proportion}$$

$$3(4) = 7x$$

$$12 = 7x$$

$$\frac{12}{7} = \frac{7x}{7}$$

$$\boxed{\frac{12}{7} = x}$$

$$-2(x+2)$$

$$-\frac{2}{3} \cancel{=} \frac{-4}{x+2}$$

$$-12 = -2x - 4$$

$$-12 + 4 = -2x$$

$$\frac{-8}{-2} = \frac{-2x}{-2}$$

$$\boxed{4 = x}$$

$$(-3,7) \; ; \; (5, y) \qquad M = \frac{13}{-5}$$

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

$$-\frac{13}{5} = \frac{y-7}{5-(-3)}$$

$$-\frac{13}{5} \bcancel{=} \frac{y-7}{8}$$

$$-13(8) = 5(y-7)$$

$$-104 = 5y - 35$$

$$-104 + 35 = 5y$$

$$\frac{-69}{5} = \frac{5y}{5}$$

$$\boxed{\frac{-69}{5} = y}$$

$$\boxed{-13.8 = y}$$
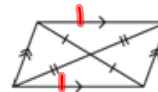
A **quadrilateral** is a polygon with 4 sides.

A **trapezoid** is a quadrilateral that has exactly one pair of parallel sides.

A **parallelogram** is a quadrilateral with both pairs of opposite sides parallel.
All parallelograms have:
- opposite sides equal
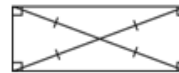- opposite angles equal
- diagonals that bisect each other

(Continues on next page)

6.2 Slopes of Parallel and Perpendicular Lines

Activate Prior Learning:
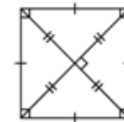# Properties of Quadrilaterals

A **rectangle** is a parallelogram with 4 right angles. It has all the properties of a parallelogram and its diagonals are equal.
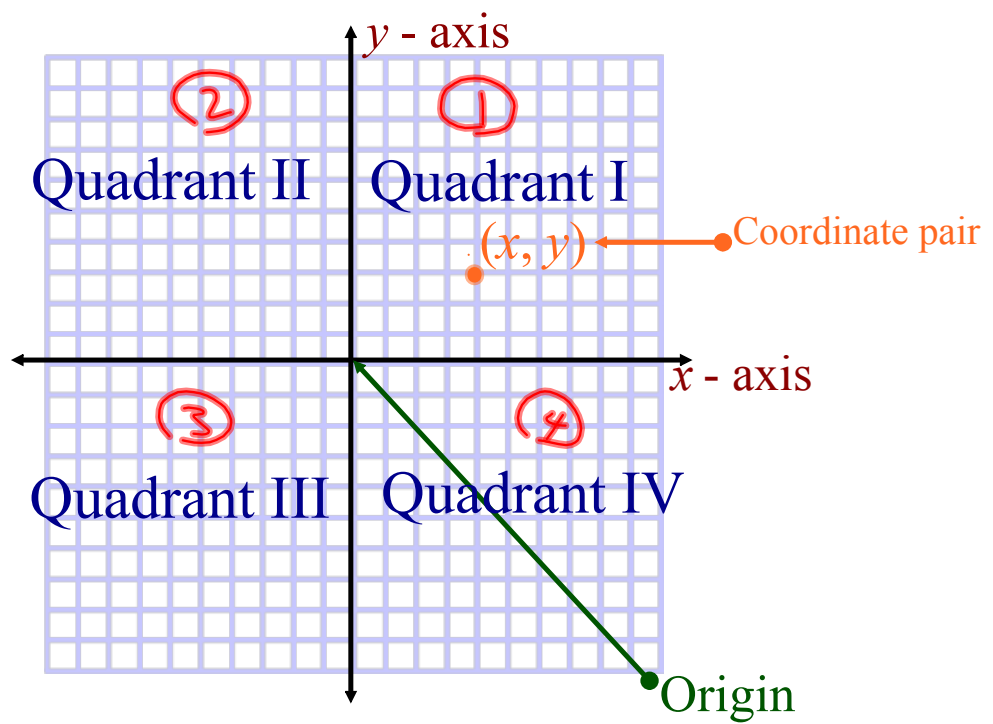
A **rhombus** is a parallelogram with 4 equal sides. It has all the properties of a parallelogram and its diagonals are perpendicular.

A **square** is a parallelogram with 4 equal sides and 4 right angles. A square has all the properties of a parallelogram, a rectangle, and a rhombus.
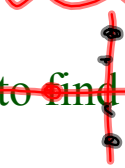
6.2 Slopes of Parallel and Perpendicular Lines

Cartesian Plane

y - axis

② Quadrant II

① Quadrant I

(x, y)

Coordinate pair

x - axis

③ Quadrant III

④ Quadrant IV

Origin

Finding Intercepts

- *x* - **intercept**: - a point where the graph crosses the *x*-axis.

  - to find the *x*-intercept $\Rightarrow$ let $y = 0$ & solve for *x*.

- *y* - **intercept**: - a point where the graph crosses the *y*-axis.

  - to find the *y*-intercept $\Rightarrow$ let $x = 0$ & solve for *y*.

Example: Find both intercepts given the line...

$$3x - 6y = 12$$

x-Int: (y=0)

$3x - 6(0) = 12$

$3x = 12$

$x = 4$

$(4, 0)$

y-Int. (x=0)

$3(0) - 6y = 12$

$\dfrac{-6y}{-6} = \dfrac{12}{-6}$

$y = -2$

$(0, -2)$

Calculating Slope

#1. Graph

> **Slope =** $\dfrac{\textbf{Rise}}{\textbf{Run}}$

ex:
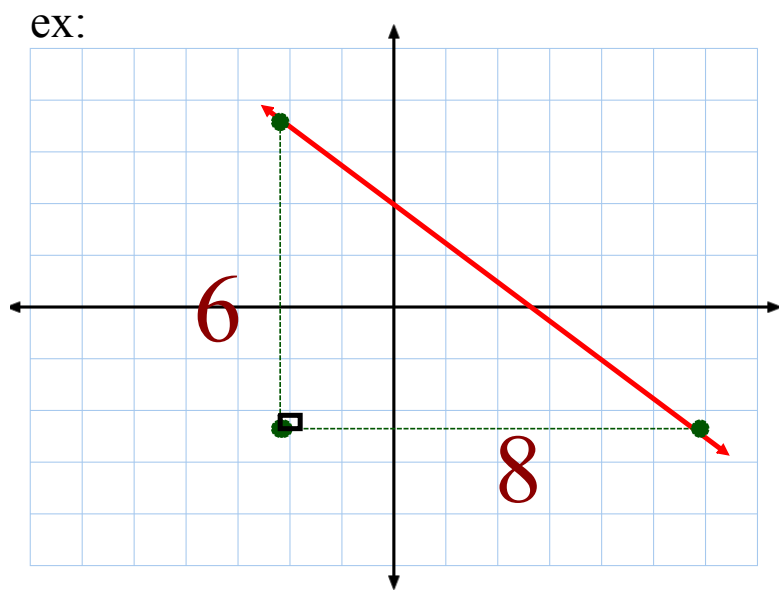
#2. Two Points

ex: (-3, 5) & (1, -7)

$$m = \frac{\Delta y}{\Delta x} = \frac{y_2 - y_1}{x_2 - x_1}$$
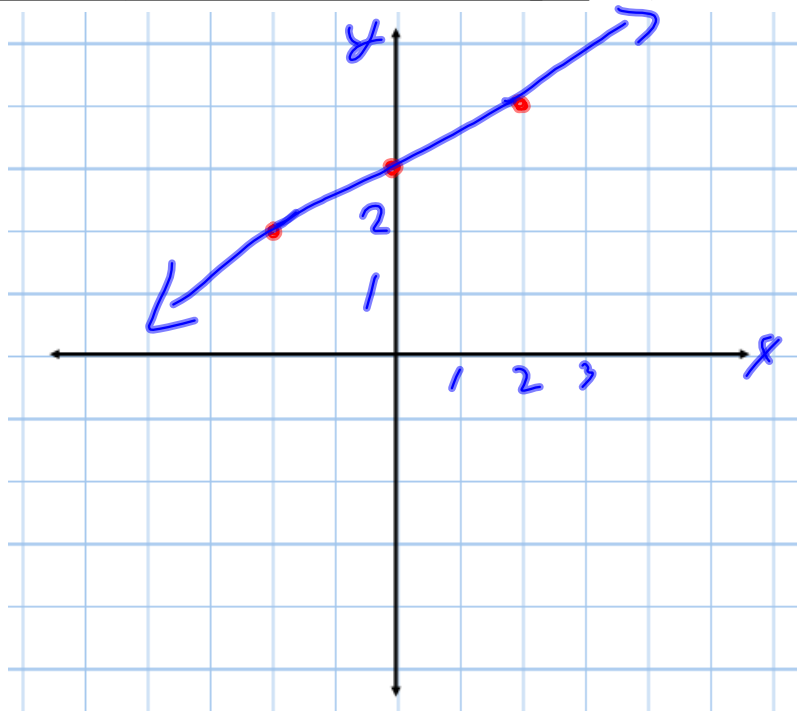
Graphing Linear Functions

Method #1 - Table of Values (must have at least 3 points)

ex: $3x - 6y + 18 = 0$

$$\frac{3x + 18}{6} = \frac{6y}{6}$$

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

x	y
0	3
-2	2
2	4

Method #2 - Using x/y intercepts

ex: $x - 5y - 10 = 0$
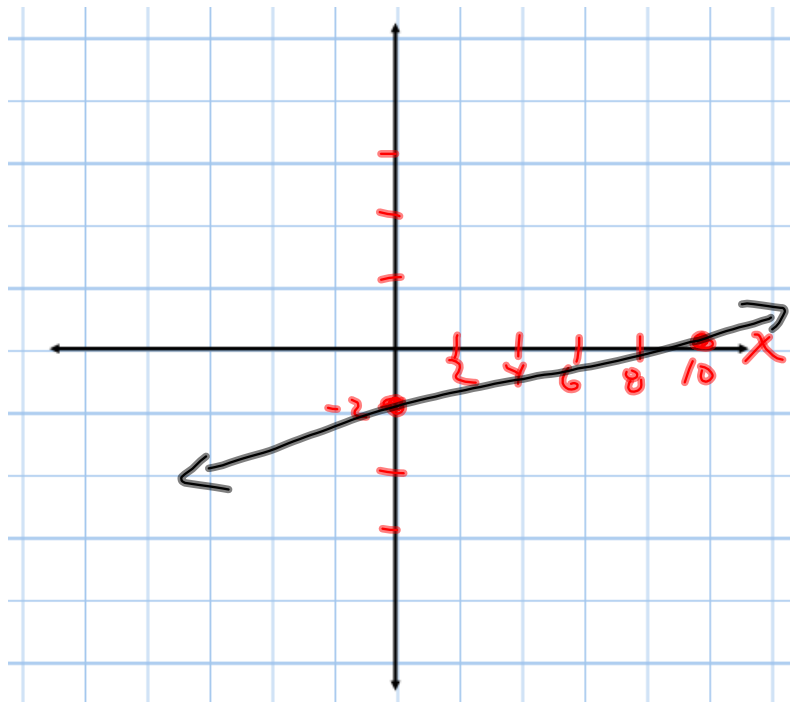
Intercepts:

X-Int: (y=0)
$x - 10 = 0$
$x = 10$
$(10, 0)$

Y-Int: (x=0)
$-5y - 10 = 0$
$-5y = 10$
$y = -2$
$(0, -2)$

Practice Questions:

Page 339 - 343
#5, 6, 9, 11, 13, 15, 16, 17, 22, 23, 26, 28, 29

Attachments

Review - Practice Test for Sinusoidal Functions.doc

Worksheet.doc