

$$m = \text{slope} = \frac{\text{vertical change} \updownarrow}{\text{horizontal change} \leftrightarrow} = \frac{\text{rise}}{\text{run}} = \frac{y_2 - y_1}{x_2 - x_1}$$

* Rate of change is the same thing as slope.

(ex) \$ per hr, \$/hr

* Use
 $m = \frac{\text{rise}}{\text{run}}$
 to find the slope
 of a graph of a line

* Use
 $m = \frac{y_2 - y_1}{x_2 - x_1}$
 to find the slope
 of 2 ordered
 pairs

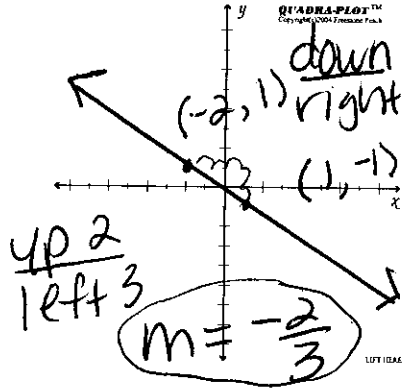
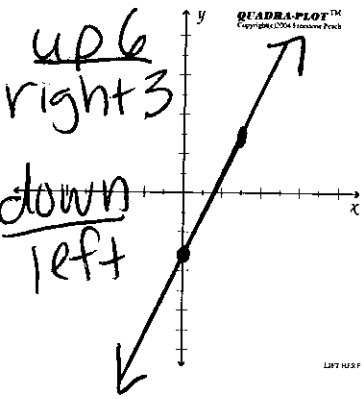
(ex) $(-24, 8)$ $(-2, -12)$

$$m = \frac{-12 - 8}{-2 - (-24)}$$

$$m = \frac{-20}{22}$$

$m = \frac{-10}{11}$

Reduce!



ALL
 Vertical
 Lines
 have an
 undefined
 slope.

$m = \frac{6}{3} = 2$
 Positive:
 line rises to
 the right

Negative:
 line falls
 to the right

$$m = \frac{0}{\#}$$

$m = 0$

ALL
 Horizontal
 Lines have
 a zero slope.

Slope (6.1)

Slope - Intercept (6.2)

Standard Form (6.4)

Point - Slope (6.5)

Parallel & Perpendicular Lines

Slope-Intercept Form of a Line:

$y = mx + b$ where $m = \text{slope}$ and $b = \text{y-intercept}$
 * the y-intercept is where the line crosses the y-axis.

case 1 What is the slope and y-intercept for each equation?

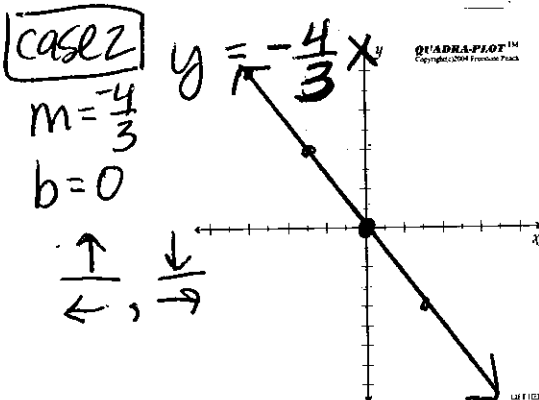
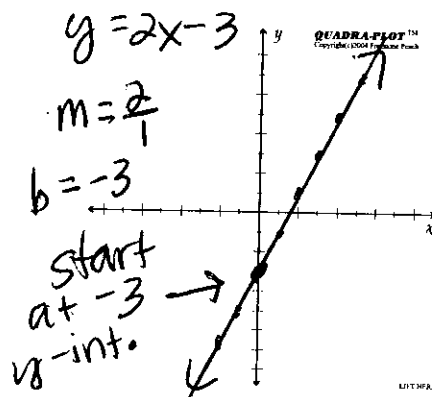
(ex) $y = 2x - 3$
 $m = 2$ $b = -3$

(ex) $y = 9 - 1x$
 $y = -1x + 9$
 $m = -1$ $b = 9$

(ex) $y - 2 = -3x + 2$
 $y = -3x + 2$
 $m = -3$ $b = 2$

(ex) $2y - 6 = 3x$
 $2y = 3x + 6$
 $y = \frac{3}{2}x + 3$
 $m = \frac{3}{2}$ $b = 3$

case 2 Graph the Line



case 3 Write the equation of the line given the slope + y-int.

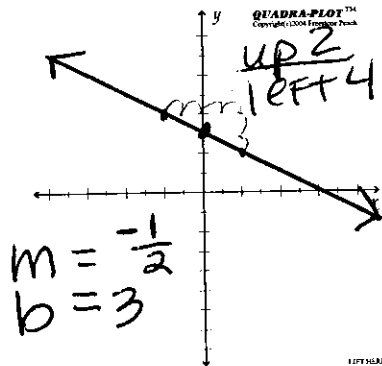
(ex) $m = \frac{2}{9}$ $b = 3$

answer:
 $y = \frac{2}{9}x + 3$
 $y = 0x + 5$
 $y = 0 + 5$
 $y = 5$

(ex) $m = 0$ $b = 5$
 Horizontal Line

case 4 Find the equation of a line from its graph.

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



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

Slope-Intercept (6.2)

Standard Form (6.4)

Point-slope (6.5)

Parallel - Perpendicular Lines