

2.1 Relations and Functions

$$f(x) = 3 - 5x, \quad g(x) = 2 - x^2, \quad h(x) = \frac{2}{3}x + 1$$

1) $f(4)$

$$3 - 5(4)$$

$$3 - 20$$

$$f(4) = -17$$

2) $h(5)$

$$\frac{2}{3}\left(\frac{5}{1}\right) + 1$$

$$\frac{10}{3} + 1 \cdot \frac{3}{3}$$

$$\frac{10}{3} + \frac{3}{3}$$

$$h(5) = \frac{13}{3}$$

3) $g(-5)$

$$2 - (-5)^2$$

$$2 - 25$$

$$g(-5) = -23$$

4) $f\left(\frac{2}{3}\right)$

$$3 - 5\left(\frac{2}{3}\right)$$

$$\frac{3}{3} \cdot \frac{3}{1} - \frac{10}{3}$$

$$\frac{9}{3} - \frac{10}{3}$$

$$f\left(\frac{2}{3}\right) = -\frac{1}{3}$$

2.2 Linear Equations

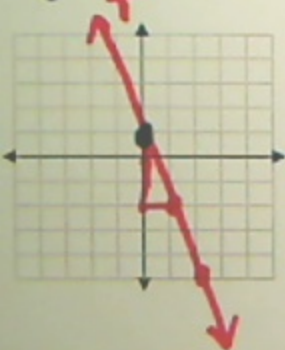
Slope-Intercept Form: $y = mx + b$

$m = \text{slope} = \frac{\text{rise}}{\text{run}}$
movement

$b = \text{y-intercept}$
begin

1) $y = 1 - 3x$

$$y = -3x + 1$$



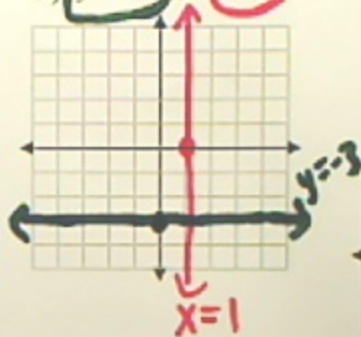
2) $3x - 2y = 4$

$$\begin{array}{r} -3x \quad -3x \\ -2y = -3x + 4 \\ \hline -2 \quad -2 \quad -2 \end{array}$$

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

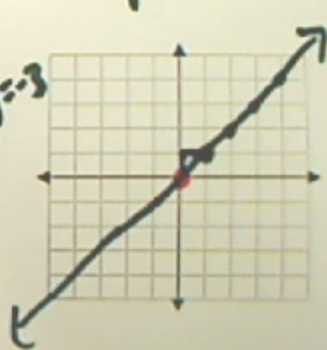


3) $y = -3$ & $x = 1$



4) $y = x$

$$y = 1x + 0$$



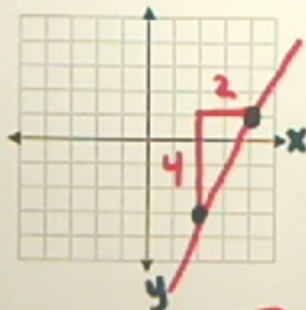
$$\text{Slope: } m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{\text{rise}}{\text{run}}$$

Find Slope:

5) $(2, -3)$ and $(4, 1)$
 x_1, y_1 x_2, y_2

$$m = \frac{1 - (-3)}{4 - 2}$$

$$m = \frac{4}{2} = 2$$



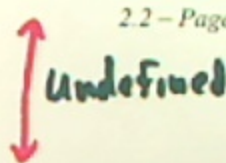
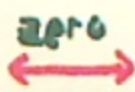
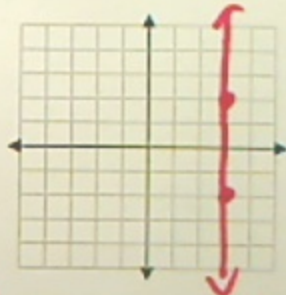
$$m = \frac{4}{2} = 2$$

6) $(3, 2)$ and $(3, -2)$

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

$$m = \frac{-4}{0}$$

Undefined



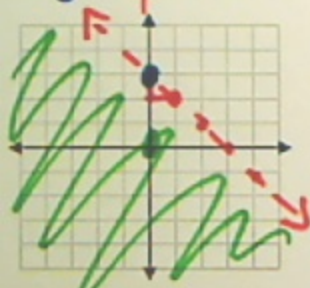
2.7 Two-Variable Inequalities

\leq or \geq **Solid Lines**

Graph the following

1) $y < 3 - x$

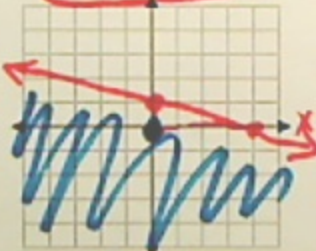
$$y < -1x + 3$$



$$\begin{aligned}(0, 0) \\ 0 < 3 - 0 \\ 0 < 3\end{aligned}$$

2) $-x - 4y \geq -4$

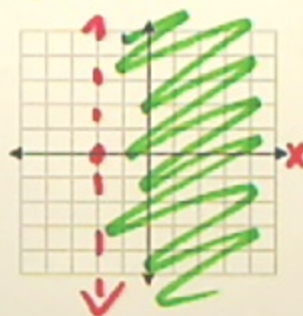
$$\begin{aligned}+x & \quad +x \\ \hline -4y & \geq x - 4 \\ \frac{-4y}{-4} & \geq \frac{x-4}{-4} \\ y & \leq -\frac{1}{4}x + 1\end{aligned}$$



$$\begin{aligned}(0, 0) \\ -0 - 4(0) & \geq -4 \\ 0 & \geq -4\end{aligned}$$

$<$ or $>$ **Dotted Lines**

3) $x > -2$



4) $y \leq 4$

