

$$1. a) |2x + 4| - 3 = 19$$

$C_1$

$$(2x + 4) - 3 = 19$$

$$2x + 4 - 3 = 19$$

$$2x + 1 = 19$$

$$-1 \quad -1$$

$$2x = \frac{18}{2}$$

$$x = 9$$

$$C_2 \quad (-2x - 4) - 3 = 19$$

$$-2x - 4 - 3 = 19$$

$$-2x - 7 = 19$$

$$+7 \quad +7$$

$$-2x = 26$$

$$\frac{-2}{-2} \quad \frac{26}{-2}$$

$$x = -13$$

$$b) -2 + |2x - 1| \leq 16$$

$C_1$

$$-2 + (2x - 1) \leq 16$$

$$-2 + 2x - 1 \leq 16$$

$$-3 + 2x \leq 16$$

$$+3 \quad +3$$

$$2x \leq 19$$

$$\frac{2x}{2} \leq \frac{19}{2}$$

$$x \leq 9\frac{1}{2}$$

$C_2$

$$-2 + (-2x + 1) \leq 16$$

$$-2 - 2x + 1 \leq 16$$

$$-1 - 2x \leq 16$$

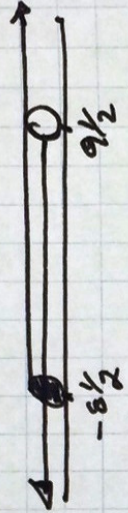
$$+1 \quad +1$$

$$-2x \leq 17$$

$$\frac{-2x}{-2} \leq \frac{17}{-2}$$

$$x \geq -8\frac{1}{2}$$

$$\boxed{S.S. = \{-13, 9\}}$$



$$\boxed{S.S. = \{-8\frac{1}{2}, 9\frac{1}{2}\}}$$

②

$$a) 3(3x - 5) + 4(-4x + 1) = 12$$

$$9x - 15 + (-16x) + 4 = 12$$

$$-7x - 11 = 12$$

$$+11 \quad +11$$

$$-7x = 23$$

$$\frac{-7x}{-7} = \frac{23}{-7}$$

$$x = -\frac{23}{7}$$

$$b) \frac{3}{4}(4x - 1) - \frac{1}{3}(x - 1) > \frac{1}{4}$$

$$\left(\frac{3}{3}\right) \frac{3}{4}(4x - 1) - \left(\frac{4}{4}\right) \frac{1}{3}(x - 1) > \frac{1}{4} \left(\frac{3}{3}\right)$$

$$\frac{9}{4}(4x - 1) - \frac{4}{12}(x - 1) > \frac{3}{12}$$

$$9(4x - 1) - 4(x - 1) > 3$$

$$36x - 9 - 4x + 4 > 3$$

$$32x - 5 > 3$$

$$+5 \quad +5$$

$$\frac{32x}{32} > \frac{8}{32}$$

$$x > \frac{1}{4}$$

$$\boxed{S.S.: \left\{\frac{1}{4}, \infty\right\}}$$

③ • Slope is the measurement of how steepness of a line

•  $\frac{\text{Rise}}{\text{Run}}$  • Rate of Change

④

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

$$b) y = mx + b$$

$$c) Ax + By = C$$

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

5

a)  $x_1, y_1$   
 $P_1 (1, 2)$   
 $P_2 (-1, 0)$   
 $x_2, y_2$

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

$$= \frac{0 - 2}{-1 - 1}$$

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

= 1

6

$P_1 (0, 1)$   
 $P_2 (2, 3)$   
 $x_1, y_1$   
 $x_2, y_2$

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

$$= \frac{3 - 1}{2 - 0} = \frac{2}{2}$$

= 1

7

a)  $x_1, y_1$   
 $(4, -2)$   
 $x_2, y_2$   
 $(1, -10)$

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

$$= \frac{-10 - (-2)}{1 - 4}$$

$$= \frac{-10 + 2}{-3} = \frac{-8}{-3}$$

=  $\frac{8}{3}$

$x_1, y_1$   
 $(-1, -1)$  &  $x_2, y_2$   
 $(-12, 4)$

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

$$= \frac{4 - (-1)}{-12 - (-1)}$$

$$= \frac{4 + 1}{-12 + 1} = \frac{5}{-11}$$

=  $-\frac{5}{11}$

7a

$x_1, y_1$   
 $(x, 2)$   
 $x_2, y_2$   
 $(4, -1)$

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

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

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

$$-4(4 - x) = 3(-3)$$

$$-16 + 4x = -9$$

$$+16 \quad +16$$

$$\frac{4x}{4} = \frac{7}{4}$$

x =  $\frac{7}{4}$

b)

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

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

$$\frac{4}{1} = \frac{5 - y}{-2 - 2}$$

$$\frac{04}{1} \Rightarrow \frac{-5 - y}{-4}$$

$$4(-4) = 1(-5 - y)$$

$$-16 = -5 - y$$

$$+5 \quad +5$$

$$-11 = -y$$

$$x - 1 \quad x - 1$$

y = 11

8

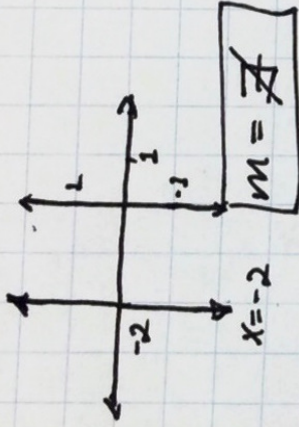
a)  $x, y$   
 $P(-10, 8)$   
 $m = 0$

y = 8

b)  $x, y$   
 $P(-4, 4)$   
 $m = 7$

x = -4

9) a)  $x = -2$



10) a)  $4x - 2y = 10$

$$-4x \quad -2y = -4x + 10$$

$$\frac{-2y}{-2} = \frac{-4x + 10}{-2}$$

$$y = 2x - 5$$

10) a)  $P(-3, -6) \quad m = 3$

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

$$y - (-6) = 3(x - (-3))$$

$$y + 6 = 3x + 9$$

$$-6$$

$$y = 3x + 3$$

$$-3x \quad -3x$$

$$-3x + y = 3$$

$$x-1 \quad x-1 \quad x-1$$

$$3x + y = 3$$

12) a)  $P(4, 9)$  parallel to  $y = \frac{1}{5}x + 1$

$$x_1 \quad y_1 \quad m = \frac{1}{5}$$

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

$$y - 9 = \frac{1}{5}(x - 4)$$

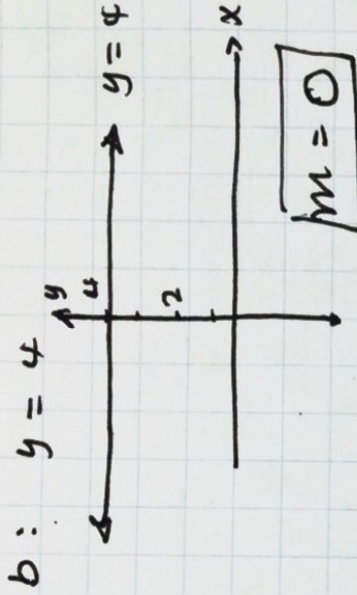
$$y - 9 = \frac{1}{5}x - \frac{4}{5}$$

$$+9 \quad +9$$

$$y = \frac{1}{5}x + \frac{41}{5}$$

13)  $A(4, 12) \quad B(-2, 4)$

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{4 - 12}{-2 - 4} = \frac{-8}{-6} = \frac{4}{3}$$



1)  $-8x + 3y = -2$

$$+8x \quad +8x$$

$$3y = \frac{8x - 2}{3}$$

$$y = \frac{8}{3}x - \frac{2}{3}$$

b)  $P(4, -9) \quad m = -5$

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

$$y - (-9) = -5(x - 4)$$

$$y + 9 = -5x + 20$$

$$-9 \quad -9$$

$$y = -5x + 11$$

$$+5x \quad +5x$$

$$5x + y = 11$$

b)  $P(8, 7)$  parallel to  $3x - 5y = 2$

$$x_1 \quad y_1$$

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

$$3x - 5y = 2$$

$$-3x \quad -3x$$

$$y - 7 = m(x - 8)$$

$$y + 7 = \frac{3}{5}x - \frac{24}{5}$$

$$-7 \quad -7$$

$$y = \frac{3}{5}x - \frac{59}{5}$$

$$y = \frac{3}{5}x - \frac{2}{5}$$

$$m = \frac{3}{5}$$

$$y = \frac{4}{3}x + \frac{52}{3}$$

$$*3 \quad *3 \quad *3$$

$$3y = 4x + 52$$

$$-4x \quad -4x$$

$$-4x + 3y = 52$$