

ia)  $(5, 1) (-4, -2)$

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

$$a = \frac{(-2) - (1)}{(-4) - (5)}$$

$$a = \frac{-3}{-9}$$

$$a = \frac{1}{3}$$

b)  $(-2, -1) (-4, -9)$

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

$$a = \frac{(-9) - (-1)}{(-4) - (-2)}$$

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

$$a = 4$$

c)  $(-3, -2) (1, -4)$

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

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

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

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

d)  $(1, 2) (1, 6)$

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

$$a = \frac{(6) - (2)}{(1) - (1)}$$

$$a = \frac{4}{0}$$

$$a = \text{undefined}$$

e)  $(5, 1) (2, 1)$

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

$$a = \frac{(1) - (1)}{(2) - (5)}$$

$$a = \frac{0}{-3}$$

$$a = 0$$

2a)  $(-1, 2) (-3, -6)$

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

$$a = \frac{(-6) - (2)}{(-3) - (-1)}$$

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

$$a = 4$$

perpendicular line

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

b)  $(-3, -2) (-6, 1)$

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

$$a = \frac{(-1) - (-2)}{(-6) - (-3)}$$

$$a = \frac{1}{-3}$$

$$a = -\frac{1}{3}$$

perpendicular line

$$a = 3$$

c)  $(2, 3) (2, 5)$

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

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

$$a = \frac{2}{0}$$

$a = \text{undefined } x = 2$

perpendicular line

$$a = 0$$

2d) (4, 2) (1, 2)

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

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

$$a = \frac{0}{-3}$$

$$a = 0$$

perpendicular line

a = undefined

e) (2, -6) (3, 4)

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

$$a = \frac{(4) - (-6)}{(3) - (2)}$$

$$a = \frac{10}{1}$$

$$a = 10$$

perpendicular line

$$a = -\frac{1}{10}$$

3a) (3, 4) slope = -1

$$y = -1x + b$$

$$4 = -1(3) + b$$

$$4 = -3 + b$$

$$4 + 3 = b$$

$$7 = b$$

$$y = -1x + 7$$

b) (1, 3) slope =  $\frac{1}{2}$

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

$$3 = \frac{1}{2}(1) + b$$

$$3 = \frac{1}{2} + b$$

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

$$\frac{6}{2} - \frac{1}{2} = b$$

$$b = \frac{5}{2}$$

$$y = \frac{1}{2}x + \frac{5}{2}$$

c) (-2, -5) slope = 0

$$y = -5$$

$$y = 0x + b$$

$$-5 = 0(-2) + b$$

$$-5 = 0 + b$$

$$-5 = b$$

$$y = -5$$

d) (4, 7) slope =  $\frac{3}{4}$

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

$$7 = \frac{3}{4}(4) + b$$

$$7 = 3 + b$$

$$7 - 3 = b$$

$$4 = b$$

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

e) (1, -3) slope =  $-\frac{2}{3}$

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

$$-3 = -\frac{2}{3}(1) + b$$

$$-3 = -\frac{2}{3} + b$$

$$-\frac{3}{1} + \frac{2}{3} = b$$

$$-\frac{9}{3} + \frac{2}{3} = b$$

$$-\frac{7}{3} = b$$

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

4a)  $(-5, 2)$   $(-1, 1)$

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

$$a = \frac{(1) - (2)}{(-1) - (-5)}$$

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

$$y = ax + b$$

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

$$2 = \frac{-1}{4}(-5) + b$$

$$\frac{2}{1} = \frac{5}{4} + b$$

$$\frac{8}{4} - \frac{5}{4} = b$$

$$\frac{3}{4} = b$$

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

b)  $(-2, -5)$   $(7, 4)$

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

$$a = \frac{(4) - (-5)}{(7) - (-2)}$$

$$a = \frac{9}{9}$$

$$a = 1$$

$$y = ax + b$$

$$y = 1x + b$$

$$-5 = 1(-2) + b$$

$$-5 = -2 + b$$

$$-5 + 2 = b$$

$$-3 = b$$

$$y = 1x - 3$$

c)  $(-1, 0)$   $(0, 6)$

↳ y-intercept

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

$$a = \frac{(6) - (0)}{(0) - (-1)}$$

$$a = \frac{6}{1}$$

$$a = 6$$

$$y = 6x + 6$$

d)  $(-2, -2)$   $(2, 4)$

$x = -2$

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

$$a = \frac{(4) - (-2)}{(2) - (-2)}$$

$$a = \frac{6}{0}$$

undefined  
equation  $x = -2$

e)  $(7, 5)$   $(-3, 5)$

$y = 5$

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

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

$$a = \frac{0}{-10}$$

$$a = 0$$

equation  $y = 5$

5a)  $y = 2x + 5$

$$a = 2 \quad b = 5$$

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

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

$$a = \frac{3}{2} \quad b = -4$$

c)  $4x + y = 7$

$$y = -4x + 7$$

$$a = -4 \quad b = 7$$

d)  $2x - y = 4$

$$2x - 4 = y$$

$$a = 2 \quad b = -4$$

e)  $y = 4$

$$a = \text{zero} \quad b = 4$$

6a)  $x+y=5$   
 $y=-1x+5$   
 $a=-1$

parallel line  $a=-1$   
 y-intercept is 4

$$y=-1x+4$$

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

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

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

$$a=-\frac{2}{3} \text{ pt } (1,3)$$

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

$$3=-\frac{2(1)}{3}+b$$

$$\frac{3}{1}=-\frac{2}{3}+b$$

$$\frac{9}{3}+\frac{2}{3}=b$$

$$\frac{11}{3}=b$$

$$y=-\frac{2x}{3}+\frac{11}{3}$$

c) parallel to  $y=5$   
 equation is  $y=b$   
 pt  $(-4,3)$   
 $y=3$

d)  $a=3$   $(4,0)$

$$y=3x+b$$

$$0=3(4)+b$$

$$0=12+b$$

$$-12=b$$

$$y=3x-12$$

e) line,  $(1,4)$   $(2,-3)$

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

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

$$a=\frac{-7}{1}$$

$$a=-7$$

$$y=ax+b$$

$$y=-7x+b$$

$$4=-7(1)+b$$

$$4=-7+b$$

$$4+7=b$$

$$11=b$$

$$y=-7x+11$$

$$\text{line}_2 \parallel \text{line}_1$$

$$\hookrightarrow a=-7$$

$$y=-7x+b \quad (-2,1)$$

$$1=-7(-2)+b$$

$$1=14+b$$

$$1-14=b$$

$$-13=b$$

$$y=-7x-13$$

f)  $(2,0)$   $(0,3)$

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

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

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

$$y=ax+b$$

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

g) parallel to y-axis  
 equation is  $x=\#$   
 pt  $(3,-4)$   
 equation is  $x=3$

$$6h) \quad 2x - 3y = 7$$

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

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

$$l_1, a = \frac{2}{3} \quad l_1 \perp l_2$$

$$l_2, a = -\frac{3}{2}$$

$$y = -\frac{3}{2}x + b \quad (2, 5)$$

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

$$5 = -3 + b$$

$$5 + 3 = b$$

$$8 = b$$

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

$$i) \quad 3x - 5y = 2$$

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

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

$$l_1, a = \frac{3}{5} \quad l_1 \perp l_2$$

$$l_2, a = -\frac{5}{3}$$

$$y = -\frac{5}{3}x + b \quad (3, 2)$$

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

$$2 = -5 + b$$

$$2 + 5 = b$$

$$7 = b$$

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

$$j) \quad l_1, a = 2 \quad l_1 \parallel l_2$$

$$l_2, a = 2$$

$$x\text{-intercept } (3, 0)$$

$$y = 2x + b$$

$$0 = 2(3) + b$$

$$0 = 6 + b$$

$$-6 = b$$

$$y = 2x - 6$$