5 (a) Through (0,3) Parallel to $y = 2x - 1$

$$m_1 = m_2 = 2$$

$$(0,3) \ (x,y) \quad m = 2$$

$$\frac{y-3}{x-0} = 2$$

$$y - 3 = 2x$$

$$y = 2x + 3$$

(b) through (1,4) Parallel to $2x - 3y = 1$

$$2x$$

$$-3y = 1 - 2x$$

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

$$m = \frac{2}{3} \quad (1,4)(x,y)$$

$$\frac{y-4}{x-1} = \frac{2}{3}$$

$$3y - 12 = 2x - 2$$

$$3y = 2x + 10$$

$$y = \frac{2}{3}x + \frac{10}{3}$$

(c) through (0,-2) parpendicular to $y = -4x + 2$

$$m_1 \times m_2 = -1$$

$$-4 \times m_2 = -1$$

$$m = \frac{1}{4}$$

$$(0,2)(x,y) \ m = \frac{1}{4}$$

$$\frac{y-2}{x-0} = \frac{1}{4}$$

$$4y - 8 = x$$

$$4y = x + 8$$

$$y = \frac{1}{4}x + 2$$

(b)   Slope $\frac{1}{3}$

   y intercept $(0, -7)$

   $y = \frac{1}{3}x - 7$

(c)   Slope, $-\frac{5}{2}$

   y intercept $(0, 0)$

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

   $2y = -5x$

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

$$\frac{\left(\frac{2}{3}-\frac{1}{3}\right)}{\left(\frac{5}{2}+\frac{1}{2}\right)} = \frac{\frac{1}{3}}{\frac{6}{2}}$$

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

$$= 1$$

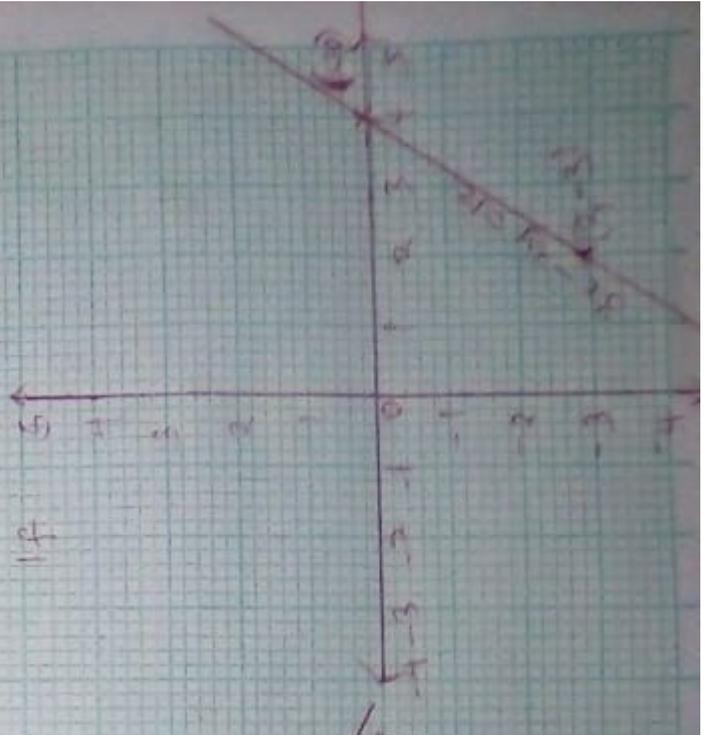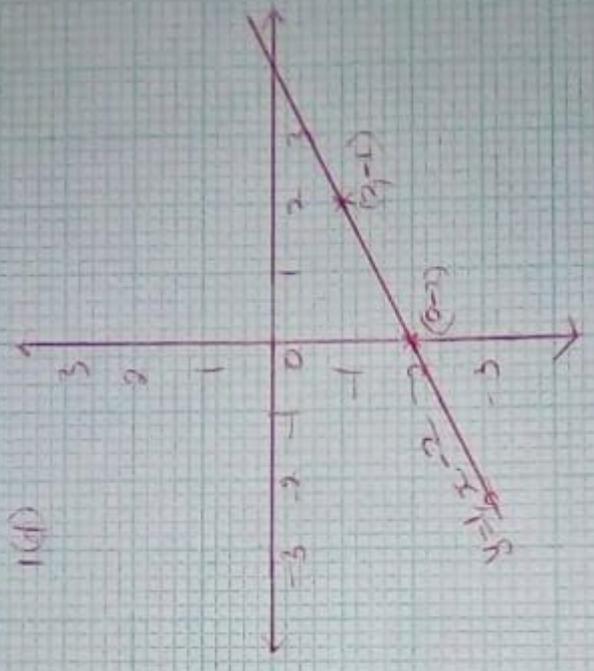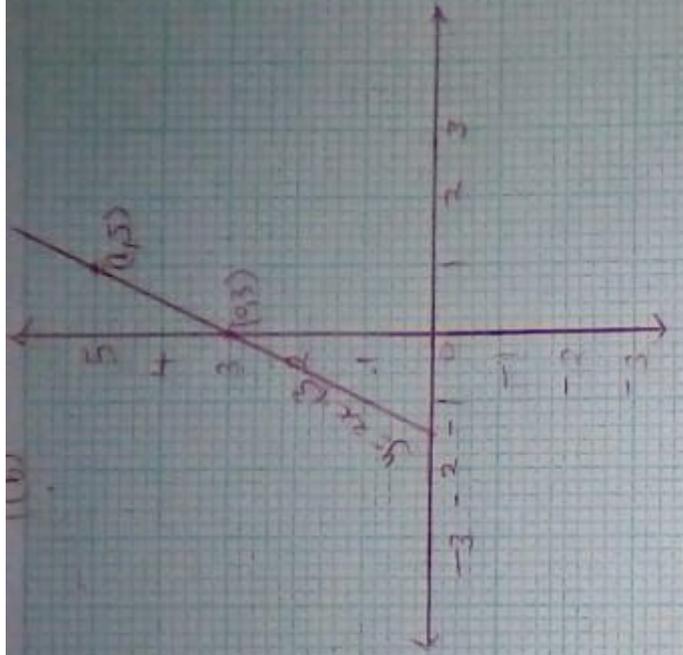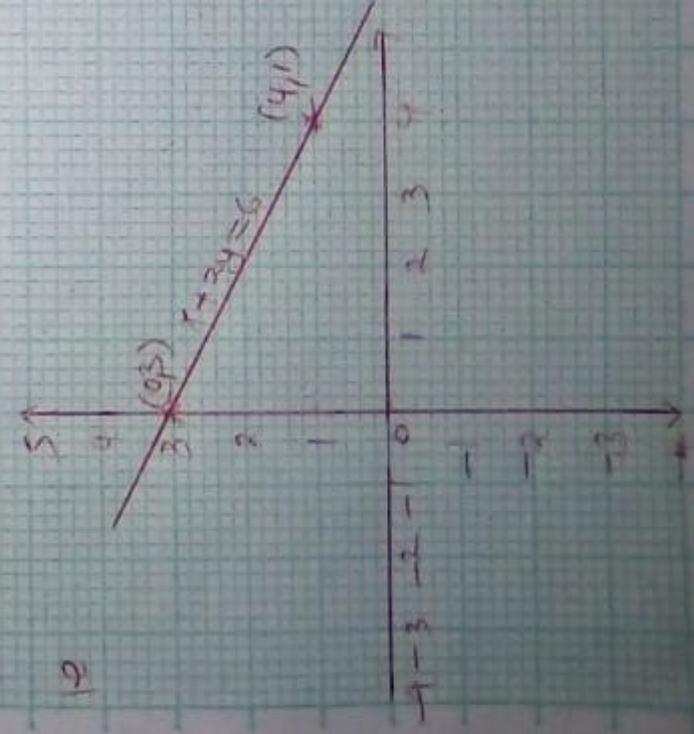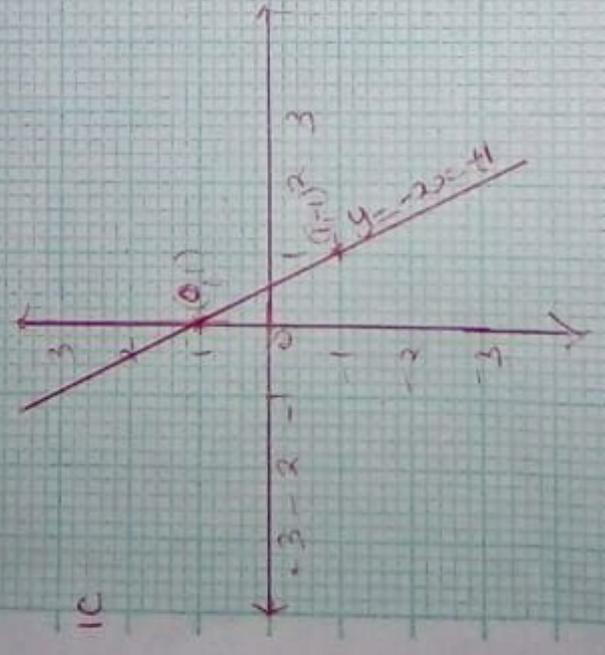$(x,y) \quad \left(-\frac{1}{2}+\frac{1}{3}\right) \quad = m = 1$

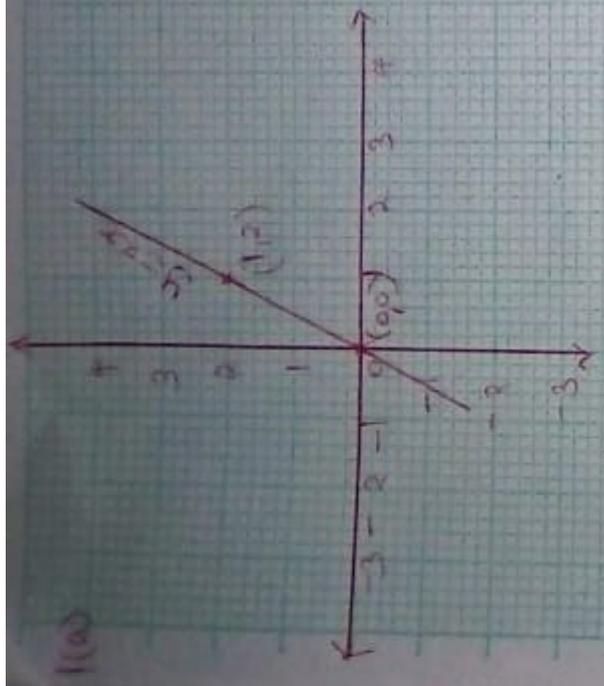$$\frac{y-\frac{1}{3}}{x+\frac{1}{2}} = 1$$

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

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

$$y = x + \frac{5}{6}$$

1(a)

$y = -x + 3$
$(1,2)$
$(0,0)$

1(b)

$(1,5)$
$(0,3)$
$y = x + 3$

1(c)

$(0,1)$
$(1,-1)^2$
$y = -2x + 4$

1(d)

$(0,-1)$
$(1,-1)$
$y = \frac{1}{2}x - 2$

1(e)

$(0,3)$
$(4,1)$
$x + 2y = 6$

1(f)

$(0,5)$
$x + y = 5$

4. Through $(-6, 4)$ Perpendicular to $2x + 5y = 10$

$$5y = 10 - 2x$$

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

$$\frac{-2}{5} \times m_2 = -1$$

$$m_2 = -1 \times \frac{5}{2}$$

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

$$(-6, 4)(x, y)$$

$$\frac{y+4}{x-} \quad \frac{y-4}{x+6} = \frac{5}{2}$$

$$2y - 8 = 5x + 30$$

$$2y = 5x + 38$$

$$y = \frac{5}{2}x + 19$$

(4)

(a) Vertical = $(2,4)$ (x,y)

gradient = 0

$$0 = \frac{y-4}{x-2}$$

$$y-4=0$$

$$y=4 \quad y=4$$

(b) horizontal through $(-1,3)$

gradient = 1

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

$$y+3 = x+1$$

$$y = x-2$$

(c) undefined $(0,3)$ (x,y)

$$\frac{y-3}{x-0} = 0$$

$$y-3=0$$

$$y=3$$

(d) slope 0 the points $(6,4)$ x,y

$$\frac{y-4}{x+6} = 0$$

$$y-4=0$$

$$y=4$$

3 (a) Slope 3

Points (x,y) (6,2)

$m = \dfrac{2y}{2x} = \dfrac{y-2}{x-6} = 3$

$3x - 18 = y - 2$

$y = 3x - 16$

(b) Slope $-\dfrac{2}{3}$ Points (x,y) (1,-5)

$\dfrac{y+5}{x-1} = \dfrac{-2}{3}$

$-2x + 2 = 3y + 15$

$3y = -2x + 2 - 15$

$y = -\dfrac{2}{3}x + -\dfrac{13}{3}$

(c) Slope $\dfrac{3}{2}$ Points

(x,y) (-2,-7)

$\dfrac{y+7}{x+2} = \dfrac{3}{2} = 3x + 6 = 2y + 14$

$2y = 3x + 6 - 14$

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

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

1 (a) $y = 2x$

x	0	1
y	0	2

(b) $y = 2x + 3$

x	0	1
y	3	5

(c) $y = -2x + 1$

x	0	1
y	1	-1

(d) $y = \frac{1}{2}x - 2$

x	0	2
y	-2	-1

e $x + 2y = 6$

x	0	4
y	3	1

f $3x - 2y = 12$

x	2	4
y	-3	0

(2)

(a)   slope -1

y intercept $= (0, 4)$

$y = mx + c$

$y = -x + 4$