

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

$$\textcircled{13} \quad \begin{matrix} (x_1, y_1) & (x_2, y_2) \\ (0, 0) & (2, 6) \end{matrix}$$

$$m = \frac{6 - 0}{2 - 0} = \frac{6}{2} = \textcircled{3}$$

$$\textcircled{14} \quad \begin{matrix} (x_1, y_1) & (x_2, y_2) \\ (-4, -3) & (7, 1) \end{matrix}$$

$$m = \frac{1 - (-3)}{7 - (-4)} = \frac{4}{11}$$

$$\textcircled{15} \quad \begin{matrix} \left(\frac{2}{3}, \frac{4}{7}\right) & \left(\frac{2}{3}, \frac{11}{7}\right) \end{matrix}$$

$$m = \frac{\frac{11}{7} - \frac{4}{7}}{\frac{2}{3} - \frac{2}{3}} = \frac{\frac{7}{7}}{0} = \frac{1}{0}$$

undefined

2.2

Writing Eqs. for Lines.

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3 FORMS OF a line

① $y = mx + b$

② $y - y_1 = m(x - x_1)$

Point-Slope Form

- use when you don't know y-int.

- use if your given a pt. & a

or if your given 2 points on a line. slope

$$\textcircled{\text{ex}} \quad (x_1, y_1) \quad (4, -2) \quad m = 2$$

$$y + 2 = 2(x - 4)$$
$$y + 2 = 2x - 8$$

$$\boxed{y = 2x - 10}$$

AFTER
you put in
pt.-slope,
distribute &
solve for y.

$$\textcircled{\text{ex}} \quad m = \frac{5}{6} \quad \text{through } (x_1, y_1) \quad (5, 6)$$

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

$$y - 6 = \frac{5}{6}(x - 5)$$

$$y - 6 = \frac{5}{6}x - 4\frac{1}{6}$$

$$\boxed{y = \frac{5}{6}x + 1\frac{5}{6}}$$

$$\textcircled{\text{ex}} \quad (x_1, y_1) \quad (-2, -1) \quad (x_2, y_2) \quad (-10, 17)$$

1st: use $m = \frac{y_2 - y_1}{x_2 - x_1}$ to find the slope

2nd: choose 1 of the pts. for pt.-slope form

$$m = \frac{17 - (-1)}{-10 - (-2)} = \frac{18}{-8} = -\frac{9}{4}$$

$$y + 1 = -\frac{9}{4}(x + 2)$$

$$y + 1 = -\frac{9}{4}x - 4\frac{1}{2}$$

$$y = -\frac{9}{4}x - 5\frac{1}{2}$$

$$y - 17 = -\frac{9}{4}(x + 10)$$

$$y - 17 = -\frac{9}{4}x - 22.5$$

$$y = -\frac{9}{4}x - 5\frac{1}{2}$$

③ Standard Form

$$Ax + By = C$$

use to find the x & y intercepts

To find the x-int: Plug zero in
and to the y-int: for y.

Plug zero in for x.

$$3x - 5y = 12$$

$$3x - \cancel{5y} = 12$$

$$3x = 12$$

$$x = 4$$

$$\cancel{3x} - 5y = 12$$

$$\frac{-5y}{-5} = \frac{12}{-5}$$

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

$$(x): (4, 0)$$

$$y: (0, -2\frac{2}{5})$$

$$-2x + 5y = -10$$

x-int: $-2x + 5(0) = -10$ y-int: $-2(0) + 5y = -10$

$(5, 0)$ $-\frac{2x}{-2} = \frac{-10}{-2}$ $x = 5$ $(0, -2)$ $\frac{5y}{5} = \frac{-10}{5}$ $y = -2$

|| Parallel Lines have the same slope!

⊥ Perpendicular Lines have slopes that are opposite reciprocals.

$$m = -\frac{2}{1} \quad m = \frac{1}{2}$$

a) $y = 5x - 3$

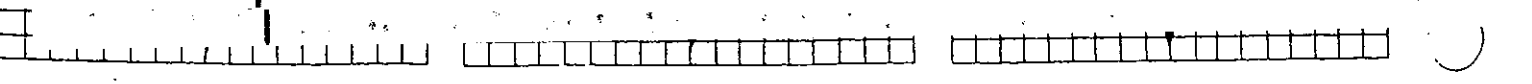
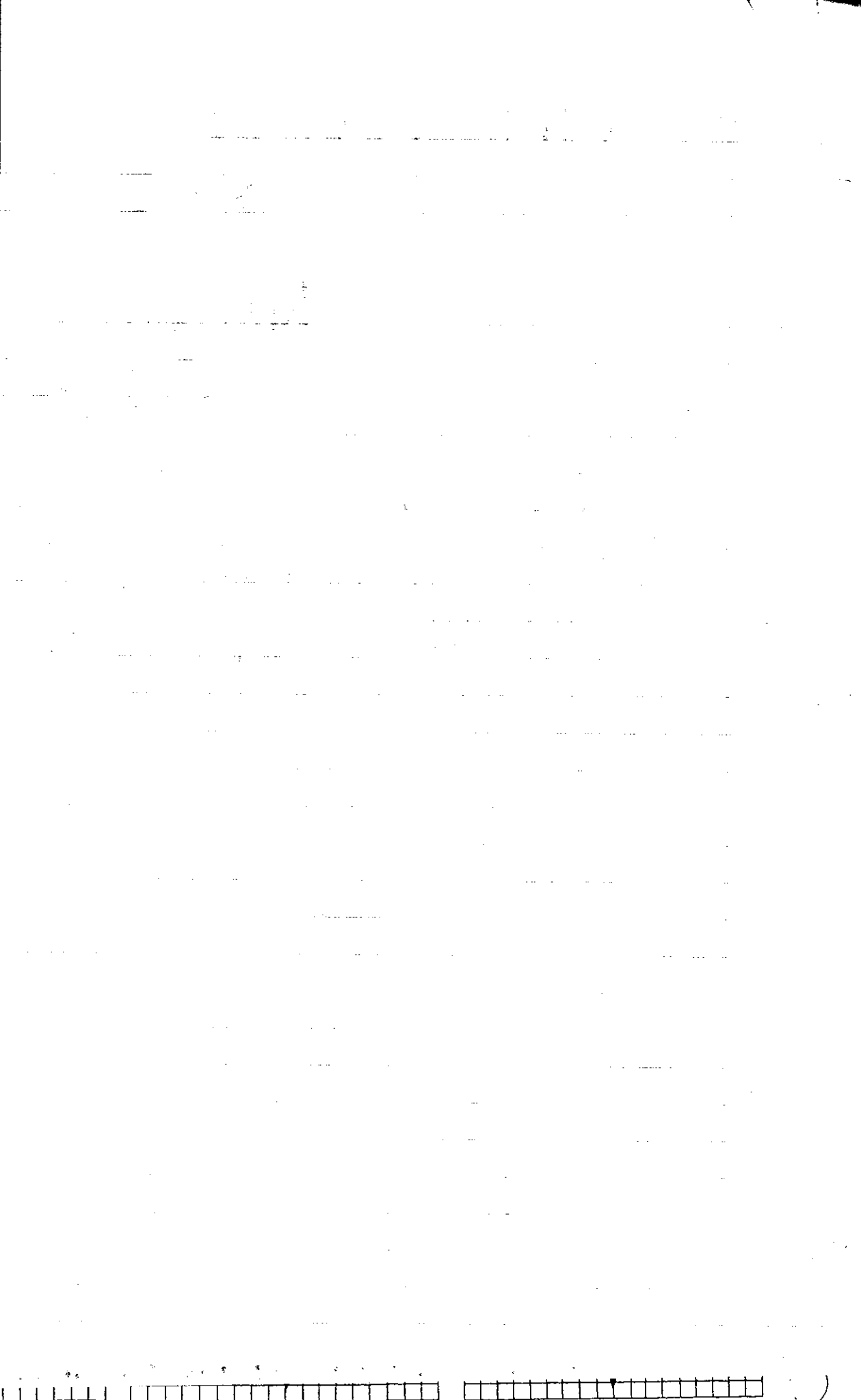
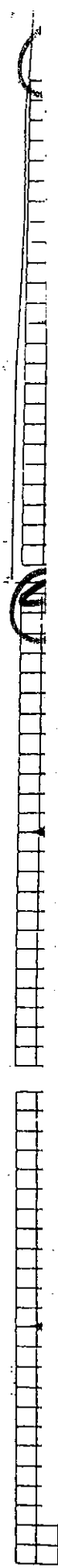
$$m = \frac{5}{1}$$

⊥ $m = -\frac{1}{5}$ $(-1, 3)$
 x_1, y_1

$$y - 3 = -\frac{1}{5}(x + 1)$$

$$y + \frac{3}{3} = -\frac{1}{5}x - \frac{1}{5} + \frac{4}{3}$$

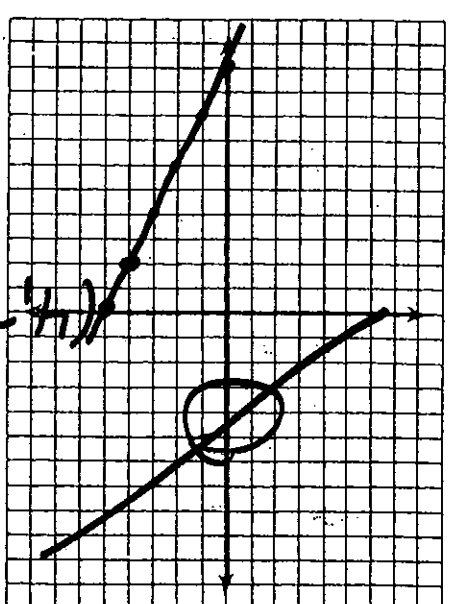
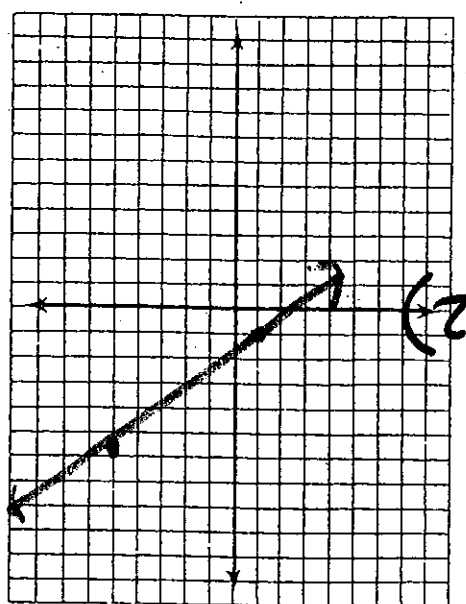
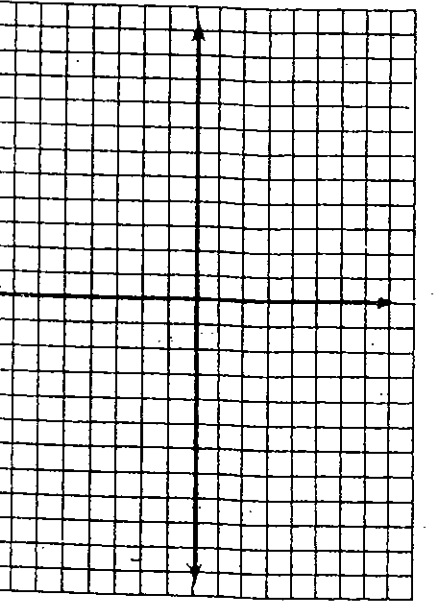
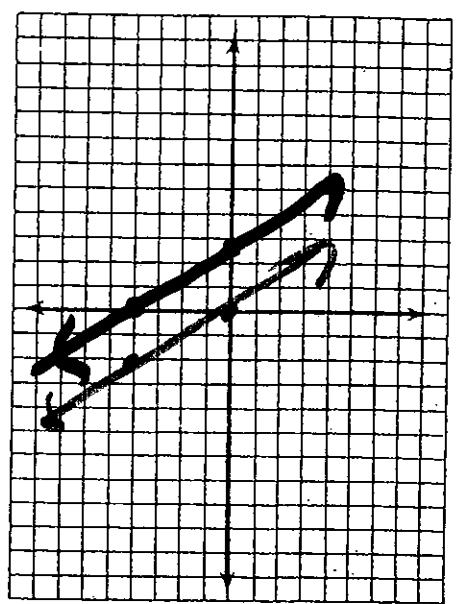
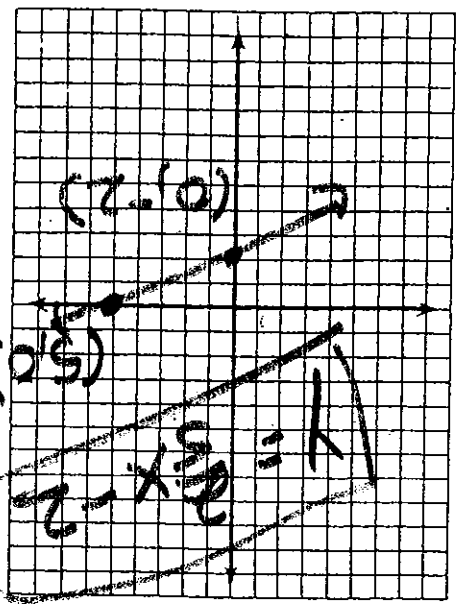
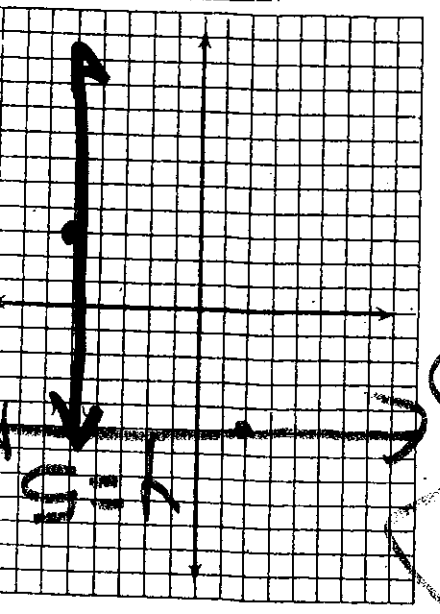
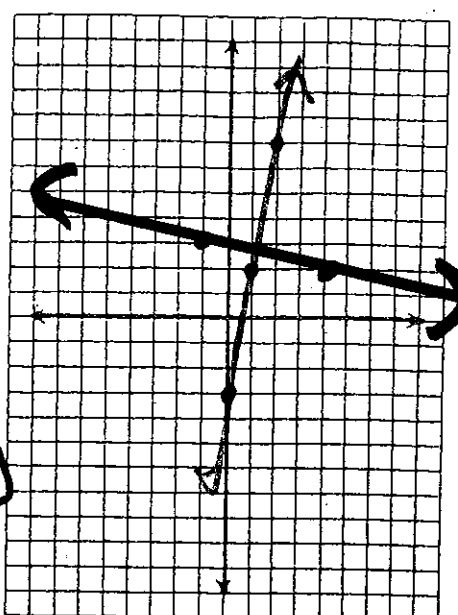
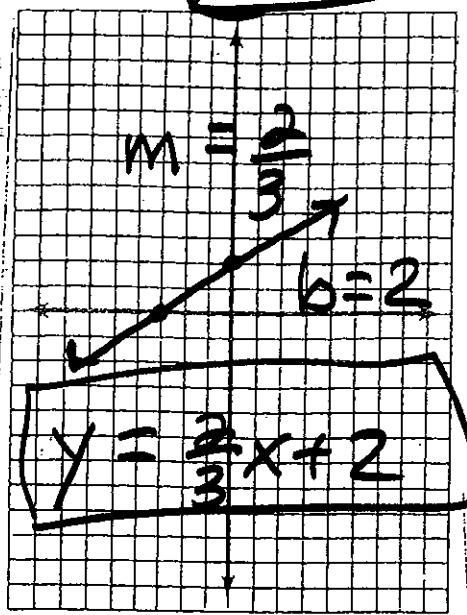
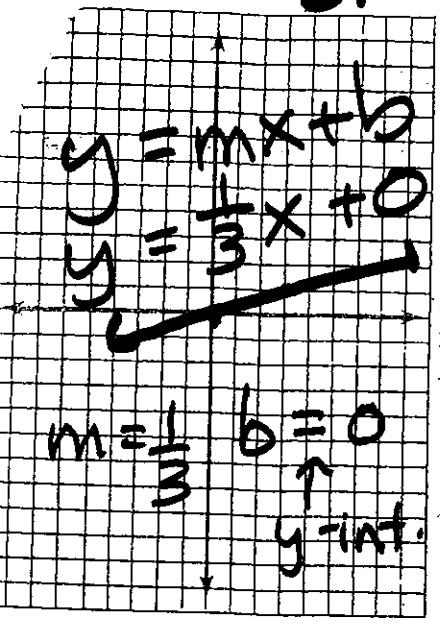
$y = -\frac{1}{5}x + \frac{4}{3}$



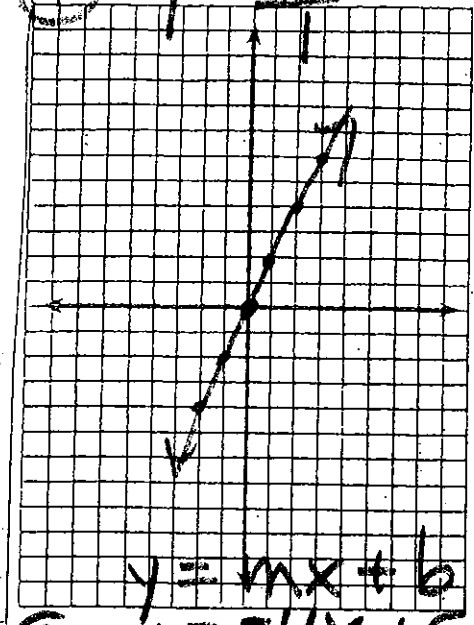
68 #51 $y = \frac{1}{3}x$

#52

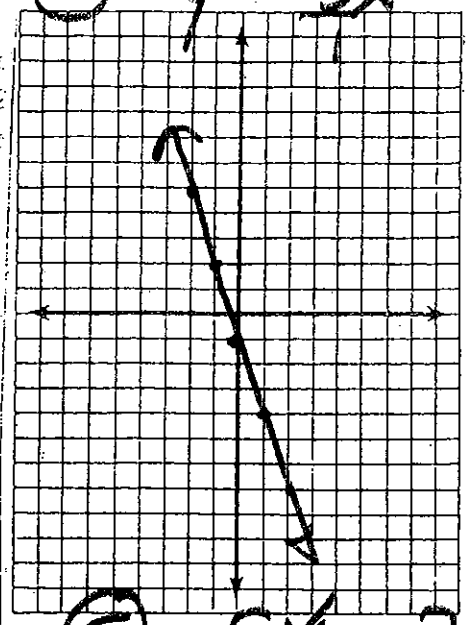
$y = \frac{5}{1}x - 3$



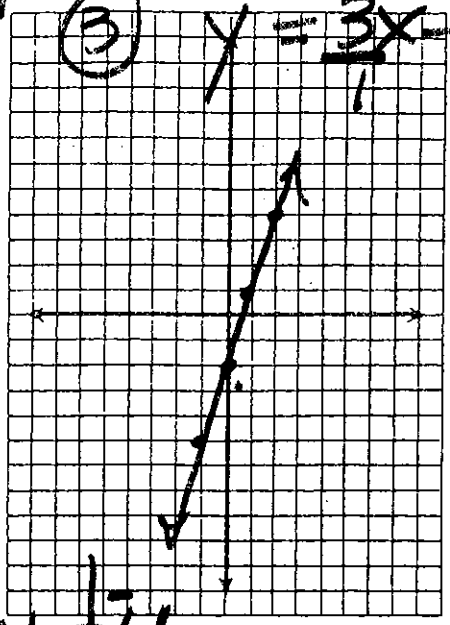
① $y = 2x + 0$



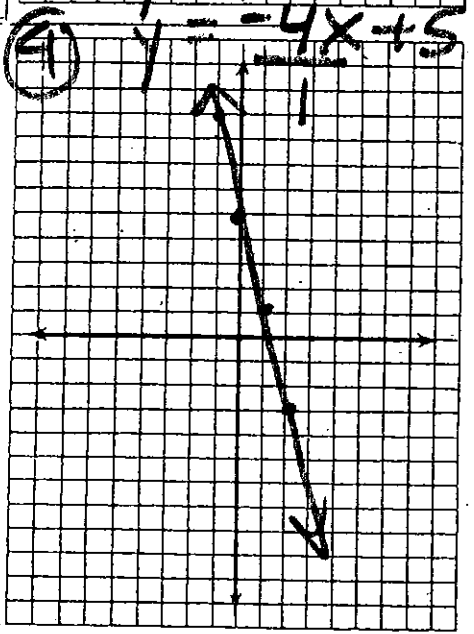
② $y = -3x - 1$ NAME



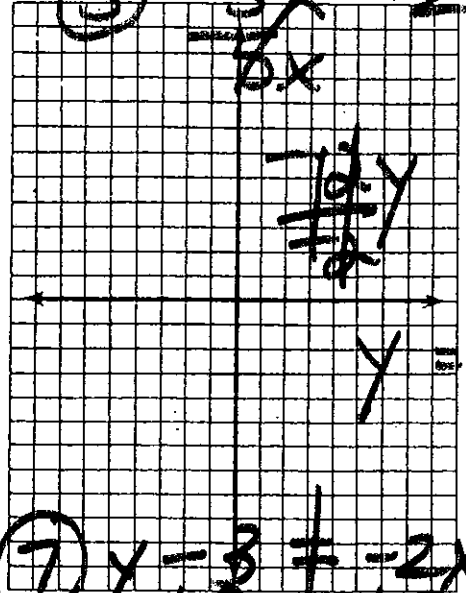
③ $y = \frac{3}{2}x - 2$



$y = mx + b$
 $y = -4x + 5$



⑤ $\frac{5x - 2}{bx}$



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

⑦ $y = \frac{3}{2}x + \frac{2}{3}$

