(1) [3 points] Determine the equation of the line with slope 5 containing the point $(-4, 1)$.

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

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

$$\boxed{y - 1 = 5(x + 4)}$$

or

$$y - 1 = 5x + 20$$

$$\boxed{y = 5x + 21}$$

(2) [3 points] Determine the equation of the line passing through the points $(-1, 3)$ and $(1, 1)$.

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{3 - 1}{-1 - 1} = \frac{2}{-2} = -1$$

$$\therefore \quad y - y_1 = m(x - x_1)$$

$$y - 1 = -1(x - 1)$$

$$\boxed{y - 1 = -(x - 1)}$$

or

$$y - 1 = -x + 1$$

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

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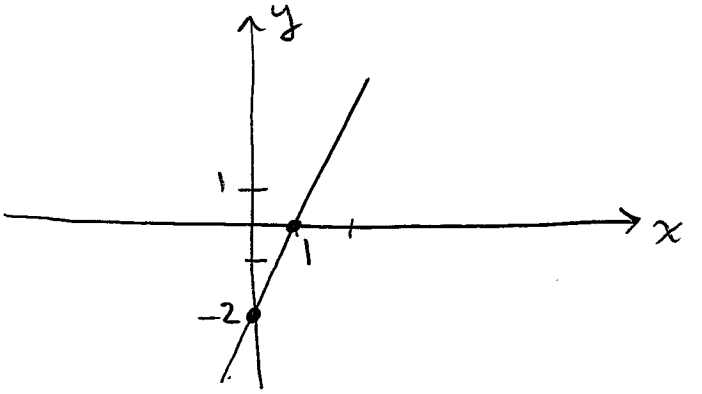
(3) [4 points] Determine the slope and y-intercept of the line $\frac{1}{2}y = x - 1$. Graph the line.

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

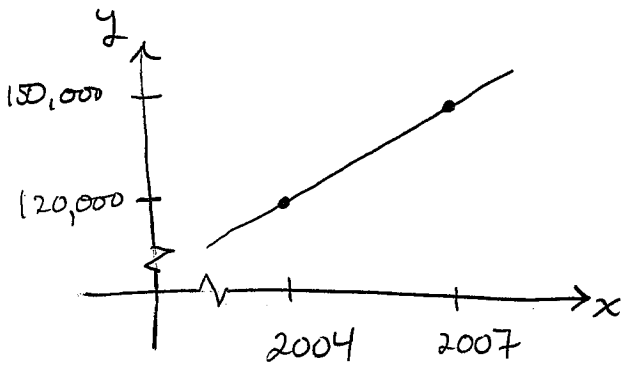
$y = 2(x-1)$

$y = 2x - 2$

$\therefore m = 2$, y-intercept is $(0, -2)$.



(4) [5 points] The average cost of a home in 2004 was \$120,000 while in 2007 it was \$150,000. Determine an equation relating y, the average cost of a home, to the year x.



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

$= \frac{150,000 - 120,000}{2007 - 2004}$

$= \frac{30,000}{3}$

$= 10,000$

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

$y - 120,000 = 10,000(x - 2004)$

or

$y = 10000x - 20,040,000 + 120,000$

$y = 10,000x - 19,920,000$