Straight Lines Homework Review

2) Find the equation of a line parallel to $y = 3x - 5$ which passes through $(4, 7)$

$m_1 = 3 \quad \Rightarrow \quad m_2 = 3$

$y = 3x + c$

Sub $(4, 7)$

$7 = 3(4) + c$

$7 = 12 + c$

$7 - 12 = c$

$-5 = c$

$y = 3x - 5$

3) Find the equation of a line perpendicular to $y = \frac{1}{2}x + 4$ which passes through $(2, -3)$

$m_1 = \frac{1}{2} \Rightarrow m_2 = -\frac{2}{1} = -2$

$y = -2x + c$

Sub $(2, -3)$ $\quad -3 = -2(2) + c$

$-3 = -4 + c$

$-3 + 4 = c$

$1 = c$

$y = -2x + 1$

4) Find the equation of a line which passes through $(2,-3)$ and $(5,9)$

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{9 - -3}{5 - 2} = \frac{9+3}{3} = \frac{12}{3} = 4$$

$$y = 4x + c$$

$(5,9)$ $\quad 9 = 4(5) + c$

$$9 = 20 + c$$

$$9 - 20 = c$$

$$-11 = c$$

$$y = 4x - 11$$