1. $\underset{x}{(-3}, \underset{y}{-5})$ PARALLEL TO $y = -4x - 7$

① FIND m

ⓐ WRITE GIVEN LINE IN SLOPE INTERCEPT FORM

$y = -4x - 7$

ⓑ IDENTIFY SLOPE OF THIS LINE

SLOPE $= -4$

ⓒ FIND m NOTE: PARALLEL LINES HAVE SAME SLOPE

$m = -4$

② $y = mx + b$

$-5 = -4(-3) + b$

$-5 = 12 + b$

$-5 - 12 = b$

$-17 = b$

③ $y = mx + b$

$y = -4x - 17$

2. $\underset{x}{(3}, \underset{y}{-2})$ PERPENDICULAR TO $3x + 7y - 2 = 0$

① ⓐ $3x + 7y - 2 = 0$

$7y = -3x + 2$

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

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

ⓑ SLOPE $= \frac{-3}{7}$

ⓒ FIND m, NOTE: PERP. LINES HAVE SLOPES THAT ARE NEGATIVE RECIPROCALS

$\frac{-3}{7}$ → $\frac{-3}{7}$ → $\frac{7}{-3}$ → $\frac{7}{3}$

START SLOPE FROM ⓑ | WRITE IN FRACTION FORM | FLIP IT | CHANGE ITS SIGN

So $m = \frac{7}{3}$

② $y = mx + b$

$-2 = \frac{7}{3}(3) + b$

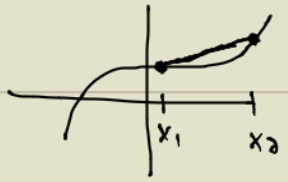
$-2 = 7 + b$

$-2 - 7 = b$

$-9 = b$

③ $y = mx + b$

$y = \frac{7}{3}x - 9$



AVERAGE RATE OF CHANGE $= \dfrac{f(x_2) - f(x_1)}{x_2 - x_1}$

3. $f(x) = x^2 + 3x \quad x_1 = 2 \quad x_2 = 5$

$f(x_2) = (5)^2 + 3(5)$

$= 25 + 15$

$y_2 = 40$

$f(x_1) = (2)^2 + 3(2)$

$= 4 + 6$

$y_1 = 10$

$\dfrac{f(x_2) - f(x_1)}{x_2 - x_1}$

$\dfrac{40 - 10}{5 - 2}$

, $\frac{30}{3}$

10