1. To find the slope of a line in general form, first solve for y; the slope is then the coefficient of x. Find the slope of the line $7x + 3y + 10 = 0$.

$$7x + 3y + 10 = 0$$

$$3y = -10 - 7x$$

$$y = \frac{-10}{3} - \underbrace{\frac{7}{3}}_{m} x$$

Slope: $-\dfrac{7}{3}$

2. Two lines are *parallel* if their slopes are the same, or *perpendicular* if their slopes are opposite-reciprocal. For the pair of lines below, first i) find the slopes of the lines and then ii) use this information to answer whether the lines are parallel or perpendicular.
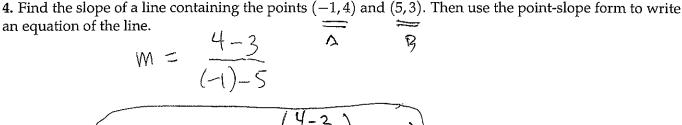
$$3x + 5y + 4 = 0 \text{ and } 5x - 3y - 8 = 0.$$

$$\overset{A}{\bigcirc} \qquad\qquad \overset{B}{\bigcirc}$$

slope A : $3x + 5y + 4 = 0$

$$5y = -3x - 4$$

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

$$M_A = -\frac{3}{5}$$

slope B : $5x - 3y - 8 = 0$

$$-3y = -5x + 8$$

$$y = \frac{5}{3}x + \frac{-8}{3}$$

$$m_B = \frac{5}{3}$$

$m_A m_B = -\frac{3}{5} \cdot \frac{5}{3} = -1$

So lines are **perpendicular**

3. Use point-slope form to write the equation of a line containing the point $(2, -5)$ with slope $m = -\dfrac{3}{4}$.

$$y - (-5) = -\frac{3}{4}(x - 2)$$

4. Find the slope of a line containing the points $(-1, 4)$ and $(5, 3)$. Then use the point-slope form to write an equation of the line.

$$M = \frac{4-3}{(-1)-5}$$

$\overline{\overline{A}}$ $\overline{\overline{B}}$

$$A: \quad y - 3 = \left(\frac{4-3}{(-1)-5}\right)(x-5) \quad \text{OR}$$

$$A: \quad y - 4 = \left(\frac{4-3}{(-1)-5}\right)(x-(-1))$$

5. You can write the *slope-intercept form* of a line by simplifying the point-slope form and solving for y. Write the slope-intercept form for the line,

$$y = -\frac{1}{6}(x - 5) + 6.$$

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

$$y = -\frac{1}{6}x + \left(\frac{5}{6} + 6\right)$$

$t = -5$ $t = 0$

6. Five years ago a house was worth \$230,000. Now the house is worth \$335,000. Assume a linear relationship between time t (measured in years) and value V (measured in dollars).

a) Find a formula for the value, V, at time t, if $t = 0$ is now.

2 points : $(-5, 230000)$ & $(0, 335000)$
            $\quad t \quad V$ $\quad t \quad V$

Slope: $\frac{335000 - 230000}{0 - (-5)}$

$$V - 335000 = \left(\frac{335000 - 230000}{5}\right)(t - 0)$$

b) What will be the value of the house 3 years from now?

set $t = 3$ & solve for V:

$$V - 335000 = \left(\frac{335000 - 230000}{5}\right)(3 - 0)$$

$$V = 335000 + \left(\frac{335000 - 230000}{5}\right) 3 \cdot \text{dollars}$$