11-12-13
1st Geo

Equation we use

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

① Give the equation in SIF that goes through $(\overset{x_1}{2}, \overset{y_1}{7})$ and has a slope of 5.

$$y - y_1 = m(x - x_1)$$
$$y - 7 = 5(x - 2)$$
$$y - 7 = 5x - 10$$
$$+7 \qquad +7$$
$$y = 5x - 3$$

② Give the equation in SIF that goes through $(2, -6)$ and has a slope of -5.

$$y - y_1 = m(x - x_1)$$
$$y - {-6} = -5(x - 2)$$
$$y + 6 = -5x + 10$$
$$-6 \qquad -6$$
$$y = -5x + 4$$

③ Give the equation in SIF that goes through $(\overset{x_1}{2}, \overset{y_1}{5})$ and $(\underline{4}, \underline{15})$.

$$\text{slope} = \frac{\Delta y}{\Delta x} = \frac{15 - 5}{4 - 2} = \frac{10}{2} = \boxed{5}$$

$$y - y_1 = m(x - x_1)$$
$$y - 5 = 5(x - 2)$$
$$y - 5 = 5x - 10$$
$$+5 \qquad +5$$
$$y = 5x - 5$$

④ Give the equation in SIF that goes through (1,7) and (2,10).

$$\text{slope} = \frac{\Delta y}{\Delta x} = \frac{10-7}{2-1} = \frac{3}{1} = 3$$

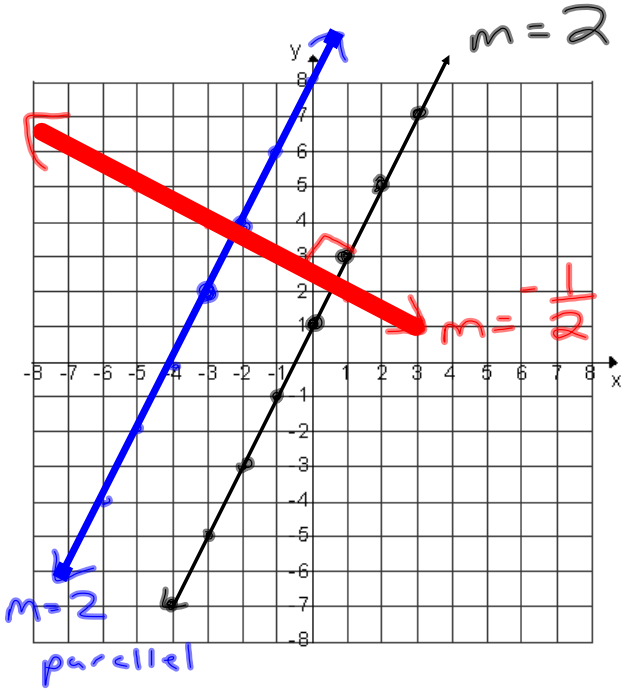
$$y - y_1 = m(x - x_1)$$

$$y - 7 = 3(x - 1)$$

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

$$+7 \qquad +7$$

$$y = 3x + 4$$



⑤ Give the equation in SIF that goes through $(2, 4)$ and is parallel to $y = 3x - 1$.

$m = 3$

$\therefore$ parallel slope is 3.

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

$y - 4 = 3(x - 2)$

$y - 4 = 3x - 6$

$+4 \quad +4$

$y = 3x - 2$

⑥ Give the equation in SIF that is perpendicular to $y = \frac{1}{2}x + 3$ and goes through $(2, 8)$ (x_1, y_1)

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

$\therefore \perp m = -2$

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

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

$y - 8 = -2x + 4$

$+8 \quad +8$

$y = -2x + 12$

⑦ Give the equation in SIF that goes through $(1, 8)$ and is parallel to $y = 3x - 2$.

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

$y - 8 = 3(x - 1)$

$y - 8 = 3x - 3$

$+8 \quad +8$

$y = 3x + 5$