

Writing Linear Equations

Situation 3: Given 2 points

1. Find the slope
2. Use point-slope form $y = m(x - x_1) + y_1$
3. Solve

Example: $(\boxed{4}, \boxed{7})$ $(-3, 2)$

$$1. m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{2 - 7}{-3 - 4} = \frac{-5}{-7} = \boxed{\frac{5}{7}}$$

$$2. y = m(x - x_1) + y_1$$
$$y = \frac{5}{7}(x - 4) + 7$$

$$3. y = \frac{5}{7}x - 2.85 + 7$$
$$y = \frac{5}{7}x + 4.15$$

Example: $(4, -3)$ $(1, 2)$

$$1. \frac{y_2 - y_1}{x_2 - x_1} = \frac{2 + 3}{1 - 4} = \frac{5}{-3} = -\frac{5}{3}$$

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

$$3. y = -\frac{5}{3}x + 6.67 - 3$$
$$y = -\frac{5}{3}x + 3.67$$

$y = mx + b$

Example: $(-4, -5)$ $(-2, 7)$

$$1. m = \frac{7 + 5}{-2 + 4} = \frac{12}{2} = 6$$

$$2. y = 6(x + 4) - 5$$

$$3. y = 6x + 24 - 5$$
$$y = 6x + 19$$