

1. Write the point-slope form of the equation of the line with slope -6 that passes through the point $(-2, -4)$. Then write the equation in slope-intercept form.

$(x_1, y_1) \rightarrow$

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

$$y - (-4) = -6(x - (-2))$$

$$\boxed{y + 4 = -6(x + 2)}$$

(point-slope form)

$\leftarrow m$

$$y + 4 = -6x - 12$$

$$\boxed{y = -6x - 16}$$

(slope-intercept form)

2. A line passes through the points $(1, 3)$ and $(2, 4)$. Find an equation of the line in point-slope form. Then write the equation in slope-intercept form.

$$m = \frac{4-3}{2-1} = \frac{1}{1} = 1$$

$$\boxed{y - 3 = 1(x - 1)}$$

(point-slope form)

$$y - 3 = x - 1$$

$$\boxed{y = x + 2}$$

(slope-intercept form)

3. Write an equation of the line passing through $(-2, -7)$ and parallel to the line whose equation is $y = -5x + 4$. Express the equation in point-slope form.

\leftarrow slope is -5

Parallel line has same slope: -5

$$y - (-7) = -5(x - (-2))$$

$$\boxed{y + 7 = -5(x + 2)}$$

(point-slope form)

4. Find the slope of any line that is perpendicular to the line whose equation is $3x - 2y = 5$.

$$\begin{aligned} -2y &= -3x + 5 \\ y &= \frac{3}{2}x - \frac{5}{2} \end{aligned}$$

Slope of any perpendicular line is $\boxed{-\frac{2}{3}}$

5. Write the equation of the line passing through $(-4, 2)$ and perpendicular to the line whose equation is $y = -\frac{1}{3}x + 7$. Express the equation in point-slope form.

↪ slope is $-\frac{1}{3}$

slope of perpendicular line : 3

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

$$\boxed{y - 2 = 3(x + 4)}$$

(point-slope form)

Q: I can run but not walk. Wherever I go, thought follows close behind. What am I?