

Algebra 1a

Writing Par/Perp lines through a point

Write the equation in slope intercept form of the line parallel and line perpendicular to given line through given point.

Parallel

Perpendicular

1) $y = 4x + 7$ $(-2, -9)$

x_1, y_1

$m = 4$

$$y + 9 = 4(x + 2)$$

$$y + 9 = 4x + 8$$

$$\boxed{y = 4x - 1}$$

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

$$y + 9 = -\frac{1}{4}(x + 2)$$

$$y + 9 = -\frac{1}{4}x - \frac{1}{2}$$

$$\boxed{y = -\frac{1}{4}x - \frac{19}{2}}$$

2) $y = -\frac{1}{2}x + 4$

$(3, -7)$
 x_1, y_1

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

$$y + 7 = -\frac{1}{2}(x - 3)$$

$$y + 7 = -\frac{1}{2}x + \frac{3}{2}$$

$$y = -\frac{1}{2}x - \frac{11}{2}$$

$m = 2$

$$y + 7 = 2(x - 3)$$

$$y + 7 = 2x - 6$$

$$\boxed{y = 2x - 13}$$

3) $3x + 4y = 16$ $(12, -5)$
 $-3x$ $-4y$

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

$$y + 5 = -\frac{3}{4}(x - 12)$$

$$y + 5 = -\frac{3}{4}x + 9$$

$$\boxed{y = -\frac{3}{4}x + 4}$$

$m = \frac{4}{3}$

$$y + 5 = \frac{4}{3}(x - 12)$$

$$y + 5 = \frac{4}{3}x - 16$$

$$\boxed{y = \frac{4}{3}x - 21}$$

$$\frac{4y}{4} = \frac{-3x}{4} + \frac{16}{4}$$

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

↑
slope