

1) Determine the equation of a line in $y = mx + b$ form that has a slope of -4 and goes through the point (-2, 5).

Finding b

$$5 = -4(-2) + b$$
$$5 = 8 + b$$
$$\begin{array}{r} -8 \\ -8 \end{array}$$
$$\boxed{b = -3}$$
$$\therefore y = -4x - 3$$

m *x* *y*

2) Determine the equation of a line in $y = mx + b$ form that has a slope $\frac{1}{4}$ and goes through the point (4, 8).

$$8 = \frac{1}{4}(4) + b$$
$$8 = 1 + b$$
$$\boxed{7 = b}$$
$$\therefore y = \frac{1}{4}x + 7 \quad \text{or} \quad y = 0.25x + 7$$

m = 1/4 *x* *y*

3) Determine the equation of a line in $y = mx + b$ form that is perpendicular to the line $y = \frac{1}{2}x - 3$ and goes through the point (-1, 4).

Our line is perpendicular to line $y = \frac{1}{2}x - 3$; therefore, its slope is -2.

$$y = mx + b \quad m = -2 \quad (-1, 4)$$
$$4 = -2(-1) + b$$
$$4 = 2 + b$$
$$\boxed{b = 2}$$
$$\therefore y = -2x + 2$$

m *b*

4) Determine the equation of a line in $y = mx + b$ form that is parallel to the line $y = -2x + 1$ and has an x-intercept of 5.

Since two lines are parallel, the slope of our line is -2 $(5, 0)$

$$y = mx + b \quad m = -2 \quad (5, 0)$$
$$0 = -2(5) + b$$
$$0 = -10 + b$$
$$\boxed{b = 10}$$
$$\therefore y = -2x + 10$$