Exercise 5

Explain how to find a line perpendicular to a linear function that passes through a given point.

Solution

Use the negative reciprocal of the slope of the given linear function, and use the point-slope formula to obtain the equation of the perpendicular line. For example, if $y = m_1 x + b_1$ is given, and the equation of the perpendicular line through (c, d) is desired, you would write

$$y - d = m_\perp (x - c)$$

$$y - d = -\frac{1}{m_1}(x - c)$$

$$y = -\frac{1}{m_1}x + \frac{c}{m_1} + d.$$