

Math Worksheet: Slope (1)

1. Find the slopes of the lines passing through:

A. (2, 4) and (2, 5)  
 $x_1, y_1 \quad x_2, y_2$

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{5 - 4}{2 - 2} = \frac{1}{0} \text{ undefined, Vertical line}$$

B. (0, 9) and (3, 9)

$$m = \frac{9 - 9}{3 - 0} = 0, \text{ Horizontal line}$$

C. (2/3, 3/2) and (7/3, 1/2)

$$m = \frac{\frac{1}{2} - \frac{3}{2}}{\frac{7}{3} - \frac{2}{3}} = -\frac{3}{5}$$

2. Find parameter  $a$  so that the line passing through the points  $(a, -3)$  and  $(3, -2)$  is perpendicular to the line  $x + y = 8$ .

$$m_1: \text{slope of } L_1: m_1 = \frac{-2 - (-3)}{3 - a}$$

$$m_2: \text{slope of } L_2: m_2 = -1$$

$$\text{perpendicular: } m_1 \cdot m_2 = -1, \text{ solve for } a = 2.$$

3. Are the lines  $4x + 3y = 0$  and  $8x + 6y = 7$  parallel, perpendicular or neither.

$$m_1: \text{slope of } 4x + 3y = 0, m_1 = -\frac{4}{3}$$

$$m_2: \text{slope of } 8x + 6y = 7, m_2 = -\frac{4}{3}$$

$$m_1 = m_2 \Rightarrow \text{parallel.}$$