Exercise 20

For the following exercises, use the descriptions of each pair of lines given below to find the slopes of Line 1 and Line 2. Is each pair of lines parallel, perpendicular, or neither?

- Line 1: Passes through $(2, 3)$ and $(4, -1)$
- Line 2: Passes through $(6, 3)$ and $(8, 5)$

Solution

Use the slope formula for each line.

$$\text{Line 1}: \quad m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-1 - 3}{4 - 2} = \frac{-4}{2} = -2$$

$$\text{Line 2}: \quad m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{5 - 3}{8 - 6} = \frac{2}{2} = 1$$

Because the slopes are neither identical nor negative reciprocals, the lines are neither parallel nor perpendicular.