Exercise 23

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 $(2, 5)$ and $(5, -1)$
- Line 2: Passes through $(-3, 7)$ and $(3, -5)$

Solution

Use the slope formula for each line.

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

$$\text{Line 2}: \quad m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-5 - 7}{3 - (-3)} = \frac{-12}{6} = -2$$

Because the slopes are identical, the lines are parallel.