3.3 The Slope of a Line

There are times when we want to measure the steepness of a line.

One way to do this is to compare the vertical change to the horizontal change by using a ratio

$$\frac{\text{vertical change}}{\text{horizontal change}} = \frac{\text{rise}}{\text{run}}$$

The slope of a non-vertical line is given by:

$$m = \text{slope} = \frac{\text{vertical change}}{\text{horizontal change}} = \frac{\text{rise}}{\text{run}}$$
Examples:

1. Find the slope of the line that contains the points (3, 5) and (6, 1)

2. Find the slope of the line that contains the points (−3, -2) and (−1, 0)

- If the slope is positive, the line is increasing
- If the slope is negative, the line is decreasing
In general:

\[(x_1, y_1) \quad \text{and} \quad (x_2, y_2)\]
Example:
1. Find the slope of the line that contains the points (4, 7) and (8, 3)

2: Find the slope of the line that contains the points (-3, -7) and (7, -2)

Do: Find the slope of the line that contains the points (-4, -6) and (2, -9)