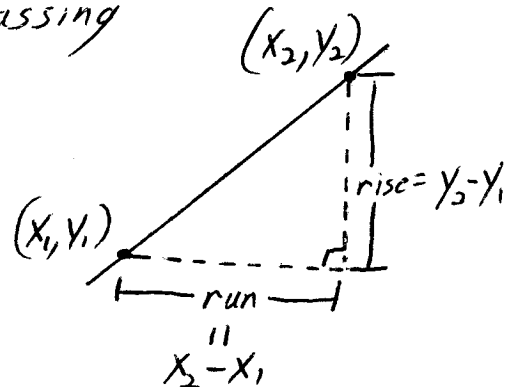


Slopes & Lines

Defn The slope of a line passing through points (x_1, y_1) & (x_2, y_2) is

$$m := \text{slope} := \frac{\text{rise}}{\text{run}} := \frac{y_2 - y_1}{x_2 - x_1}$$



Notes: 1) A horizontal line has slope 0.
2) A vertical line has an undefined slope.

Defn (Point-Slope Formula)

The equation of a line with slope m & passing through point (x_1, y_1) is

$$y - y_1 = m(x - x_1)$$

Defn (Slope-Intercept Formula)

An equation for a line with slope m & y -intercept b is

$$y = mx + b$$

Defn 1) Two lines are parallel ($\parallel$) if

their slopes are equal ($L_1 \parallel L_2 \Leftrightarrow m_1 = m_2$)

2) Two lines are perpendicular ($\perp$)

if their slopes are negative reciprocals

(i.e. $L_1 \perp L_3 \Leftrightarrow m_1 = -\frac{1}{m_3} \Leftrightarrow m_1 \cdot m_3 = -1$)

