Lines

Math 130 *Kovitz*

Slope

$$m = \frac{y_2 - y_1}{x_2 - x_1}, \quad \text{where } x_2 \neq x_1.$$

Horizontal Lines

$$m = 0$$

Equation: $y = b$.

Vertical Lines

The slope, m, is not defined.

Equation: $x = a$.

Point-slope Equation

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

Slope-intercept Equation

$$y = mx + b$$

Parallel Lines

$$m_2 = m_1$$

Perpendicular Lines

$$m_2 = -\frac{1}{m_1}$$

Distance Formula

$$d = \sqrt{(x_1 - x_2)^2 + (y_1 - y_2)^2}$$

Midpoint Formula

$$\left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$$