Algebra: Lines

\[ y = mx + b \] (slope intercept form)

1) \( m \) = slope and \( b \) = y-intercept

2) \( \text{slope} = m = \frac{y_2 - y_1}{x_2 - x_1} \)

3) 2 lines are parallel if their slopes are the same \( m = \frac{2}{3} \) and \( m = \frac{2}{3} \)

4) 2 lines are perpendicular \( \perp \) if their slopes are opposites and reciprocals \( m = \frac{2}{3} \) and \( m = \frac{-3}{2} \)

Algebra: Conic Sections (circles/parabolas)

Circle:

\[ x - h + y - k^2 = r^2 \] center: \((h, k)\)

Parabola:

\[ y = a(x - h)^2 + k \] center: \(h, k\)

Algebra: Quadratic Formula (Used to solve an equation involving \( x^2 \))

\[ x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} \]

Algebra: The Discriminant \((b^2 - 4ac)\)

tells you how many times a parabola crosses the x-axis

\[ b^2 - 4ac > 0 \] twice (2 solutions)

\[ b^2 - 4ac = 0 \] one (2 solutions)

\[ b^2 - 4ac < 0 \] none

Geometry:

Coordinate Geometry (9 questions)

Plane Geometry (14 questions)

Geometry: Distance and Midpoint Formula

Distance Formula = \( \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2} \)

Midpoint Formula = \( \left( \frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right) \)

Geometry: Area and Perimeter

Perimeter = Add up the sides

Rectangle/Square: \( A = lh \)

Triangle: \( A = \frac{1}{2}bh \)

Trapezoid: \( A = \frac{1}{2}h \left( b_1 + b_2 \right) \)