

Algebra: Lines

$$y = mx + b \text{ (slope intercept form)}$$

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 $\left(m = \frac{2}{3} \text{ and } m = \frac{2}{3}\right)$

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

Algebra: Conic Sections (circles/parabolas)

Circle:

$$(x - h)^2 + (y - k)^2 = r^2 \quad \text{center: } (h, k)$$

Parabola:

$$y = a(x - h)^2 + k \quad \text{center: } h, k$$

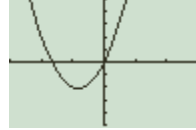
Algebra: Quadratic Formula (Used to solve an equation involving x^2)

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

Algebra: The Discriminant ($b^2 - 4ac$) tells you how many times a parabola crosses the x-axis

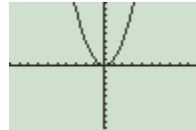
$$b^2 - 4ac > 0$$

twice (2 solutions)



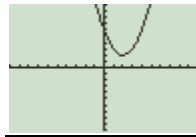
$$b^2 - 4ac = 0$$

one (2 solutions)



$$b^2 - 4ac < 0$$

none



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Geometry: Coordinate Geometry (9 questions) Plane Geometry (14 questions)

Geometry: Distance and Midpoint Formula

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

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

Geometry: Area and Perimeter

Perimeter = Add up the sides

Rectangle / Square: $A = lh$

Triangle: $A = \frac{1}{2}bh$

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