Definitions and Formulas for Multi-Subject: Secondary Teachers (Grade 7–Grade 12) Part Two: Mathematics

ALGEBRA

Quadratic Formula: $x = \dfrac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

TRIGONOMETRY

$\sin A = \dfrac{\text{opposite}}{\text{hypotenuse}}$ $\qquad$ $\cos A = \dfrac{\text{adjacent}}{\text{hypotenuse}}$ $\qquad$ $\tan A = \dfrac{\text{opposite}}{\text{adjacent}}$

GEOMETRY

Pythagorean Theorem: $a^2 + b^2 = c^2$

Area of a Triangle: $A = \dfrac{1}{2}ab$

Area of a Trapezoid: $A = \dfrac{1}{2}h(b_1 + b_2)$

Area of a Circle: $A = \pi r^2$

Lateral Area of a Right Circular Cylinder: $L = 2\pi rh$

Lateral Area of a Right Circular Cone: $L = \pi rl$ where l is the slant height

Surface Area of a Rectangular Prism: $SA = 2lw + 2hw + 2lh$

Surface Area of a Cylinder: $SA = 2\pi r^2 + 2\pi rh$

Surface Area of a Sphere: $SA = 4\pi r^2$

Volume of a Cylinder: $V = \pi r^2 h$

Volume of a Pyramid: $V = \dfrac{1}{3}Bh$ where B is the area of the base

Volume of a Right Circular Cone: $V = \dfrac{1}{3}\pi r^2 h$

Volume of a Sphere: $V = \dfrac{4}{3}\pi r^3$

COORDINATE GEOMETRY

Slope of a Line: $m = \dfrac{\Delta y}{\Delta x} = \dfrac{y_2 - y_1}{x_2 - x_1}$

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

Midpoint Formula: $\left(\dfrac{x_1 + x_2}{2}, \dfrac{y_1 + y_2}{2} \right)$

Sum of a Finite Arithmetic Series: $S_n = \dfrac{n(a_1 + a_n)}{2}$

Sum of a Finite Geometric Series: $S_n = \dfrac{a_1(1 - r^n)}{1 - r}$

Normal Curve
Standard Distribution

0.1% 0.5% 1.7% 4.4% 9.2% 15.0% 19.1% 19.1% 15.0% 9.2% 4.4% 1.7% 0.5% 0.1%

−3 −2.5 −2 −1.5 −1 −0.5 0 0.5 1 1.5 2.0 2.5 3