Common Calculus Prerequisite Formulas

Lengths

- Distance Between Points: $d = \sqrt{(x_1 - x_2)^2 + (y_1 - y_2)^2}$
- Pythagorean Theorem: $a^2 + b^2 = c^2$
- Perimeter Square: $P = 4s$
- Perimeter Parallelogram: $P = 2b + 2h$
- Perimeter Triangle: $P = a + b + c$
- Circumference Circle: $C = \pi d = 2\pi r$

Areas

- Area Square: $A = s^2$
- Area Parallelogram, e.g. Rectangle: $A = bh$
- Area Triangle: $A = \frac{1}{2}bh$
- Area Circle: $A = \pi r^2$
- Area Trapezoid: $A = h\,\frac{b_1+b_2}{2}$

Surface Areas

- Surface Area Cube: $S = 6s^2$
- Surface Area Rectangular Prism, e.g. 'Box': $S = 2lw + 2lh + 2wh$
- Surface Area Cylinder: $S = 2\pi rh + 2\pi r^2$
- Surface Area Sphere: $S = 4\pi r^2$
- Surface Area Cone: $S = \pi r\sqrt{r^2 + h^2}$

Volumes

- Volume Rectangular Prism, e.g. 'Box': $V = \ell wh$
- Volume Cylinder: $V = \pi r^2 h$
- Volume Right Circular Cone: $V = \frac{\pi}{3}r^2 h$
- Volume Sphere: $V = \frac{4}{3}\pi r^3$
- Volume Prism: $V = Bh$