

## Ontario Grade 12 College Math Formula Sheet

### Pythagorean Theorem

$a^2 + b^2 = c^2$ , where  $c$  is the length of the hypotenuse

### Linear Relations

Slope:  $m = \frac{y_2 - y_1}{x_2 - x_1}$

### Quadratic Formula

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

### Trigonometry

$$\sin \theta = \frac{\text{opposite}}{\text{hypotenuse}}$$

$$\cos \theta = \frac{\text{adjacent}}{\text{hypotenuse}}$$

$$\tan \theta = \frac{\text{opposite}}{\text{adjacent}}$$

$$\csc \theta = \frac{\text{hypotenuse}}{\text{opposite}}$$

$$\sec \theta = \frac{\text{hypotenuse}}{\text{adjacent}}$$

$$\cot \theta = \frac{\text{adjacent}}{\text{opposite}}$$

*Sine Law*

$$\frac{\sin A}{a} = \frac{\sin B}{b} = \frac{\sin C}{c}$$

*Cosine Law*

$$a^2 = b^2 + c^2 - 2bc \cos(A)$$

**Area and Volume:** for ALL calculations using  $\pi$ , always use  $\pi = 3.14$

Area of a **circle** with radius  $r$ :

$$A = \pi r^2$$

Circumference of a **circle** with radius  $r$

$$C = 2\pi r$$

Area of a **triangle** with base  $b$  and height  $h$ :

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

Volume of **Prism**:

$V = \text{area of base} \times \text{height of the prism}$

Volume of **Pyramid**:

$V = \frac{1}{3} \times (\text{the volume of the enclosing prism})$

Volume of **Cylinder** with height  $h$  and radius  $r$ :

$$V = \pi r^2 h$$

Volume of **Sphere** with radius  $r$ :

$$V = \frac{4}{3}\pi r^3$$