

# Formulas given for Final Exam

$$x^3 - y^3 = (x - y)(x^2 + xy + y^2)$$

$$x^3 + y^3 = (x + y)(x^2 - xy + y^2)$$

## Sphere

$$V = \frac{4}{3} \pi r^3 \quad S = 4\pi r^2$$

## Compound Interest

$$A = P \left( 1 + \frac{r}{n} \right)^{nt}$$

$$A = Pe^{rt}$$

## Closed Right Circular Cylinder

$$V = \pi r^2 h \quad S = 2\pi rh + 2\pi r^2$$

## Closed Right Circular Cone

$$V = \frac{1}{3} \pi r^2 h \quad S = \pi r \sqrt{r^2 + h^2} + \pi r^2$$

## Pythagorean Identities

$$\sin^2 \theta + \cos^2 \theta = 1$$

## Half-Angle Identities

$$\sin\left(\frac{\theta}{2}\right) = \pm \sqrt{\frac{1 - \cos \theta}{2}}$$

$$\cos\left(\frac{\theta}{2}\right) = \pm \sqrt{\frac{1 + \cos \theta}{2}}$$

$$\tan\left(\frac{\theta}{2}\right) = \frac{1 - \cos \theta}{\sin \theta}$$

## Double-Angle Identities

$$\sin 2\theta = 2 \sin \theta \cos \theta$$

$$\cos 2\theta = \cos^2 \theta - \sin^2 \theta$$

$$\tan 2\theta = \frac{2 \tan \theta}{1 - \tan^2 \theta}$$

## Law of Cosines

$$a^2 = b^2 + c^2 - 2bc \cos \alpha$$