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

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

Compound Interest

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

$$A = Pe^{rt}$$

Closed Right Circular Cylinder

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

Closed Right Circular Cone

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

Pythagorean Identities

$$1 + \tan^2\theta = \sec^2\theta$$
$$1 + \cot^2\theta = \csc^2\theta$$

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 Idenitities

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

Law of Cosines

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