

Precalculus 41

Final Exam Formulas

$$s = r\theta$$

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

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

$$y = \sin^{-1} x, \quad -\frac{\pi}{2} \leq y \leq \frac{\pi}{2}$$

$$y = \cos^{-1} x, \quad 0 \leq y \leq \pi$$

$$y = \tan^{-1} x, \quad -\frac{\pi}{2} \leq y \leq \frac{\pi}{2}$$

$$\cos(\alpha + \beta) = \cos \alpha \cos \beta - \sin \alpha \sin \beta$$

$$\cos(\alpha - \beta) = \cos \alpha \cos \beta + \sin \alpha \sin \beta$$

$$\sin(\alpha + \beta) = \sin \alpha \cos \beta + \cos \alpha \sin \beta$$

$$\sin(\alpha - \beta) = \sin \alpha \cos \beta - \cos \alpha \sin \beta$$

$$\tan(\alpha + \beta) = \frac{\tan \alpha + \tan \beta}{1 - \tan \alpha \tan \beta}$$

$$\tan(\alpha - \beta) = \frac{\tan \alpha - \tan \beta}{1 + \tan \alpha \tan \beta}$$

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

$$\cos(2\theta) = 2 \cos^2 \theta - 1$$

$$\cos(2\theta) = 1 - 2 \sin^2 \theta$$

$$\sin(2\theta) = 2 \sin \theta \cos \theta$$

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

$$\text{Law of Sines: } \frac{\sin \alpha}{a} = \frac{\sin \beta}{b} = \frac{\sin \gamma}{c}$$

$$\text{Law of Cosines: } c^2 = a^2 + b^2 - 2ab \cos \gamma$$

$$A = \frac{1}{2} ab \sin \gamma$$

$$A = \sqrt{s(s-a)(s-b)(s-c)}$$

$$\text{where : } s = \frac{1}{2}(a+b+c)$$

$$\cos \theta = \frac{\vec{u} \cdot \vec{v}}{\|\vec{u}\| \|\vec{v}\|}$$

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

$$A = Pe^{rt}$$

Projectile Motion:

$$x(t) = (v_0 \cos \theta)t$$

$$y(t) = -\frac{1}{2}gt^2 + (v_0 \sin \theta)t + h$$

where :

$$g = 32 \text{ ft/sec/sec}$$

$$g = 9.8 \text{ m/sec/sec}$$