Calculus 1 Formulas

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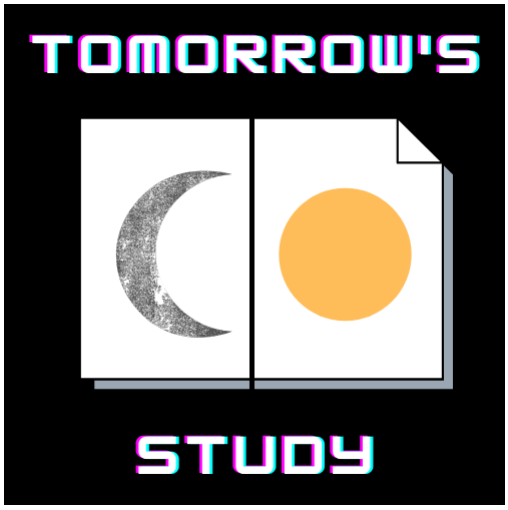

Contents

1 Trigonometric Identities

Theorem 1 (Pythagorean Identity)

- $\cos^2\theta + \sin^2\theta = 1$
- $\sec^2\theta - \tan^2\theta = 1$

Theorem 2 (Range)

- $-1 \leq \cos\theta \leq 1$
- $-1 \leq \sin\theta \leq 1$

Theorem 3 (Periodicity)

- $\cos(\theta \pm 2\pi) = \cos\theta$
- $\sin(\theta \pm 2\pi) = \sin\theta$

Theorem 4 (Symmetry)

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

Theorem 5 (Sum and Difference Identities)

- $\cos(A+B) = \cos A\cos B - \sin A\sin B$
- $\cos(A-B) = \cos A\cos B + \sin A\sin B$
- $\sin(A+B) = \sin A\cos B + \cos A\sin B$
- $\sin(A-B) = \sin A\cos B - \cos A\sin B$

Theorem 6 (Complementrary Angle Identities)

- $\cos(\frac{\pi}{2} - \theta) = \sin\theta$
- $\sin(\frac{\pi}{2} - \theta) = \cos\theta$

Theorem 7 (Double Angle Identities)

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

Theorem 8 (Half-Angle Identities)

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