TRIGONOMETRIC RATIOS SUMMARY

Definitions:

Trigonometric Identity a mathematical statement that is true for all given variables.

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Trigonometric Ratios

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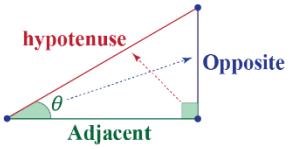
sin, cos, tan, sec, csc, cot



$$\text{SOH } \sin\theta = \frac{\text{opposite}}{\text{hypotenuse}} \qquad \csc\theta = \frac{1}{\sin\theta}$$

$$\text{CAH } \cos\theta = \frac{\text{adjacent}}{\text{hypotenuse}} \qquad \sec\theta = \frac{1}{\cos\theta}$$

$$\text{TOA } \tan\theta = \frac{\text{opposite}}{\text{adjacent}} \qquad \cot\theta = \frac{1}{\tan\theta}$$

Quotient Identity

$$\tan\theta = \frac{\sin\theta}{\cos\theta}$$

Pythogorean Identities

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$$\sin^2\theta + \cos^2\theta = 1 \quad (1)$$

(1) ÷ $\cos^2\theta$

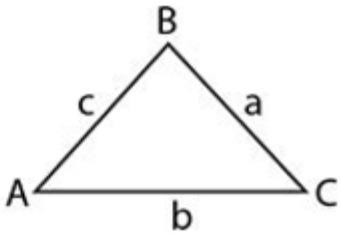
$$1 + \tan^2\theta = \sec^2\theta$$

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

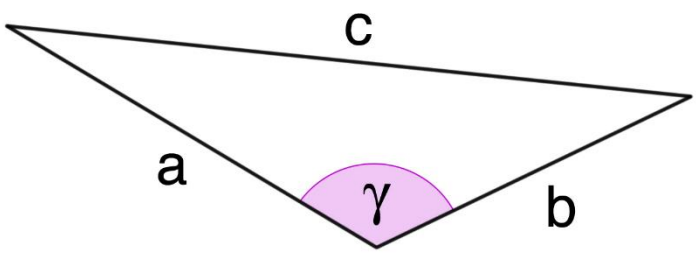
(1) ÷ $\sin^2\theta$

Sine Law

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



Cosine Law



$$c^2 = a^2 + b^2 - 2ab(\cos(\gamma))$$

Solving trigonometric equations from $0^\circ \le x \le 360^0$

$2\sin^2 x + \sin x - 1 = 0$

$(2\sin x - 1)(\sin x + 1) = 0$ **(factor)**

$2\sin x - 1 = 0$ or $\sin x + 1 = 0$

$\sin x = \frac{1}{2}$ $\sin x = -1$

$x = \frac{\pi}{6}$ or $\frac{5\pi}{6}$ $x = \frac{3\pi}{2}$

$x = 30^\circ,\ 150^\circ$ $x = 270^\circ$