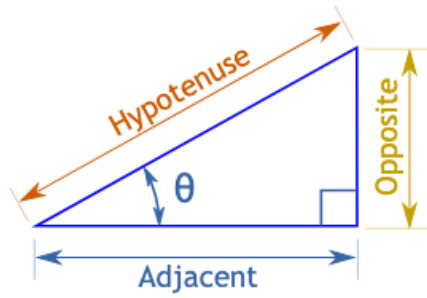# Chapter 5 - Trigonometry

$$\sin \theta = \frac{\text{Opposite}}{\text{Hypotenuse}}$$

$$\cos \theta = \frac{\text{Adjacent}}{\text{Hypotenuse}}$$

$$\tan \theta = \frac{\text{Opposite}}{\text{Adjacent}}$$

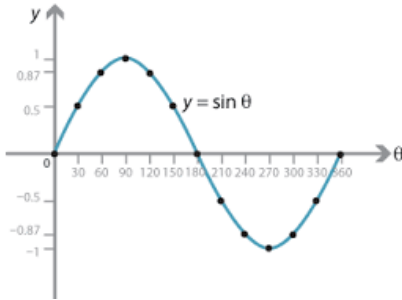There are 3 main trigonometric functions:
- └ Sin
- └ Cos
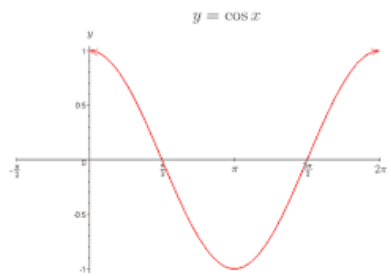- └ Tan

Trigonometric identities
- └ Sin θ = 1/Cosec θ or Cosec θ = 1/Sin θ
- └ Cos θ = 1/Sec θ or Sec θ = 1/Cos θ
- └ Tan θ = 1/Cot θ or Cot θ = 1/Tan θ
- └ $\sin^2 a + \cos^2 a = 1$
- └ $1 + \tan^2 a = \sec^2 a$
- └ $\csc^2 a = 1 + \cot^2 a$

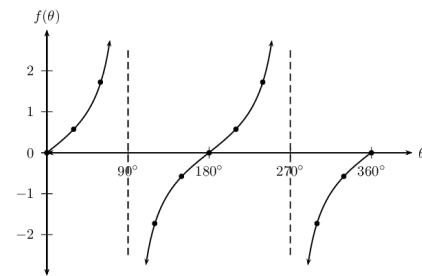Trigonometric graphs - these can be both in degrees and radians

Sin Graph	Cos Graph	Tan Graph

You can use the following rules to find sin, cos, and tan of any positive or negative angle using the corresponding acute angle made with the x-axis.

$$\sin(180° - \theta) = +\sin\theta$$
$$\sin(180° + \theta) = -\sin\theta$$
$$\sin(360° - \theta) = -\sin\theta$$

$$\tan(180° - \theta) = -\tan\theta$$
$$\tan(180° + \theta) = +\tan\theta$$
$$\tan(360° - \theta) = -\tan\theta$$

$$\cos(180° - \theta) = -\cos\theta$$
$$\cos(180° + \theta) = -\cos\theta$$
$$\cos(360° - \theta) = \cos\theta$$