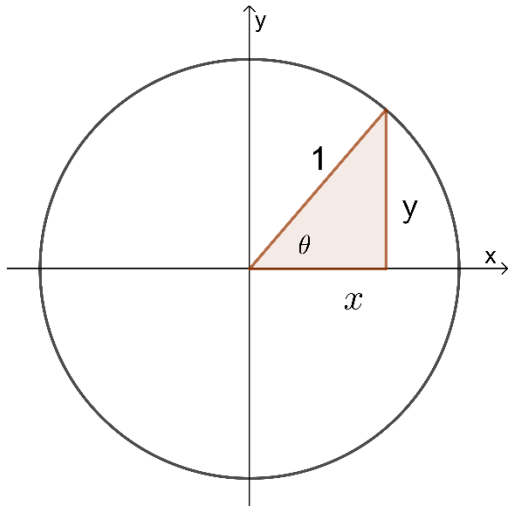


Pythagorean Trig Identity



From the unit circle, we know that

$$\cos\theta = \frac{x}{1}$$

$$\sin\theta = \frac{y}{1}$$

As this is a right-angled triangle, we can use Pythagoras' Theorem

$$x^2 + y^2 = 1$$

$$\cos^2\theta + \sin^2\theta = 1$$

As this is true for **ALL** angles, it is an identity and we should use the 'identically equal to' symbol rather than 'equal to'

We should write

$$\cos^2\theta + \sin^2\theta \equiv 1$$

Don't worry if you do not include this

We often rearrange this when we use it

$$\cos^2\theta \equiv 1 - \sin^2\theta$$

$$\sin^2\theta \equiv 1 - \cos^2\theta$$