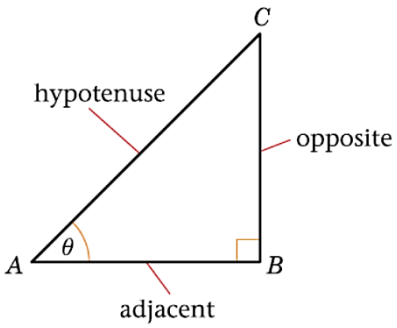
HIGH SCHOOL MATHEMATICS

TRIGONOMETRY 1

Matteman

SOH CAH TOA

$$\sin(\theta) = \frac{opp}{hyp} \qquad \cos(\theta) = \frac{adj}{hyp} \qquad \tan(\theta) = \frac{opp}{hyp}$$

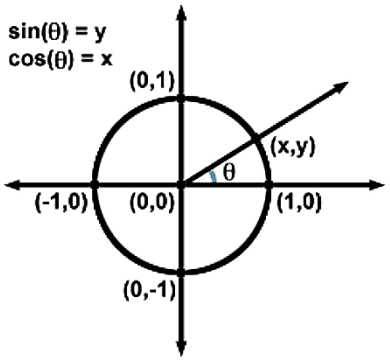


The equivalent ratios that you can the derive from the unit circle;

- $\sin(\theta) = \sin(180° - \theta)$
- $\sin(\theta) = \sin(\theta \pm 360°)$
- $\cos(\theta) = \cos(-\theta)$
- $\cos(\theta) = \cos(360° - \theta)$
- $\cos(\theta) = \cos(\theta \pm 360°)$
- $\tan(\theta) = \tan(\theta \pm 180°)$

Radian measures: θ in radians

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



Identities

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

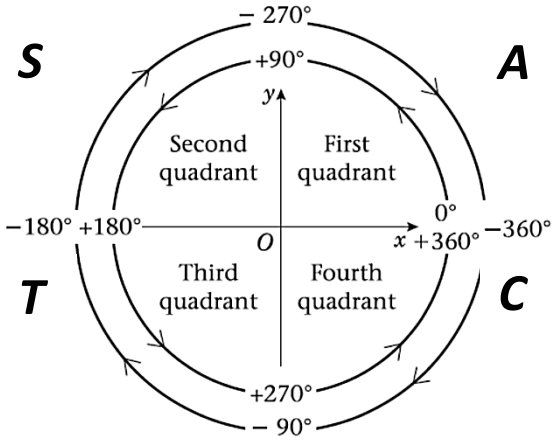
$$\tan(\theta) = \frac{\sin(\theta)}{\cos(\theta)}$$

Boundaries

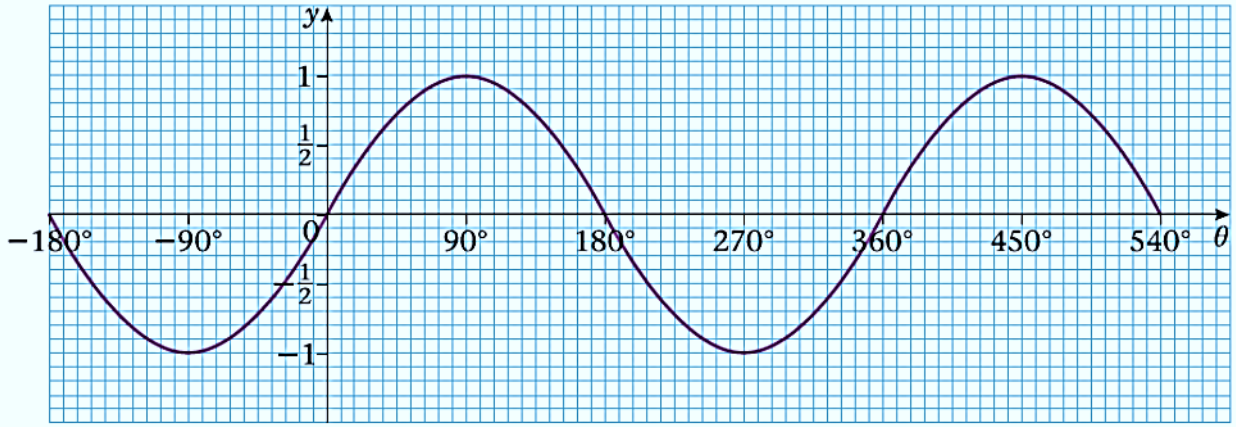
$$-1 \leq \sin(\theta) \leq 1$$

$$-1 \leq \cos(\theta) \leq 1$$

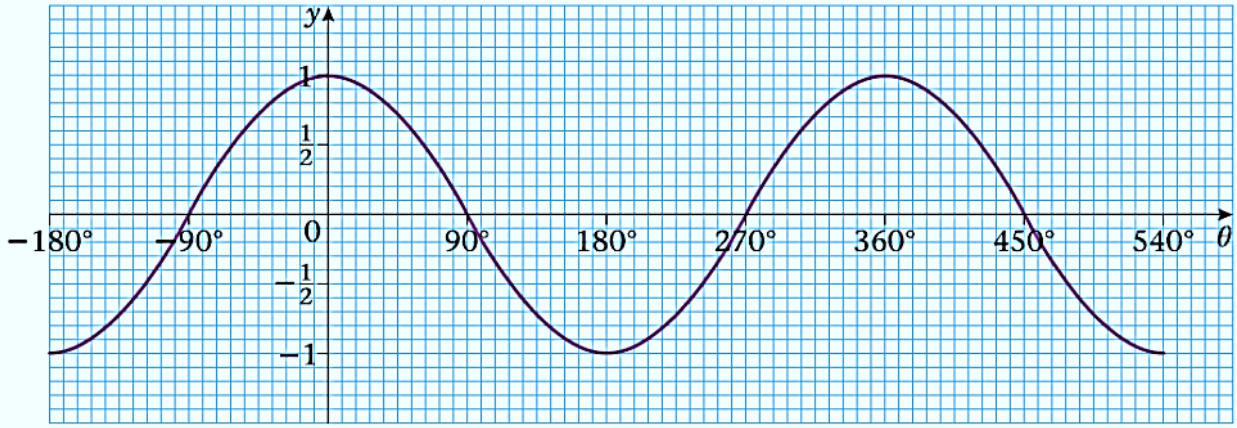
The *x*–*y* plane is divided into quadrants:



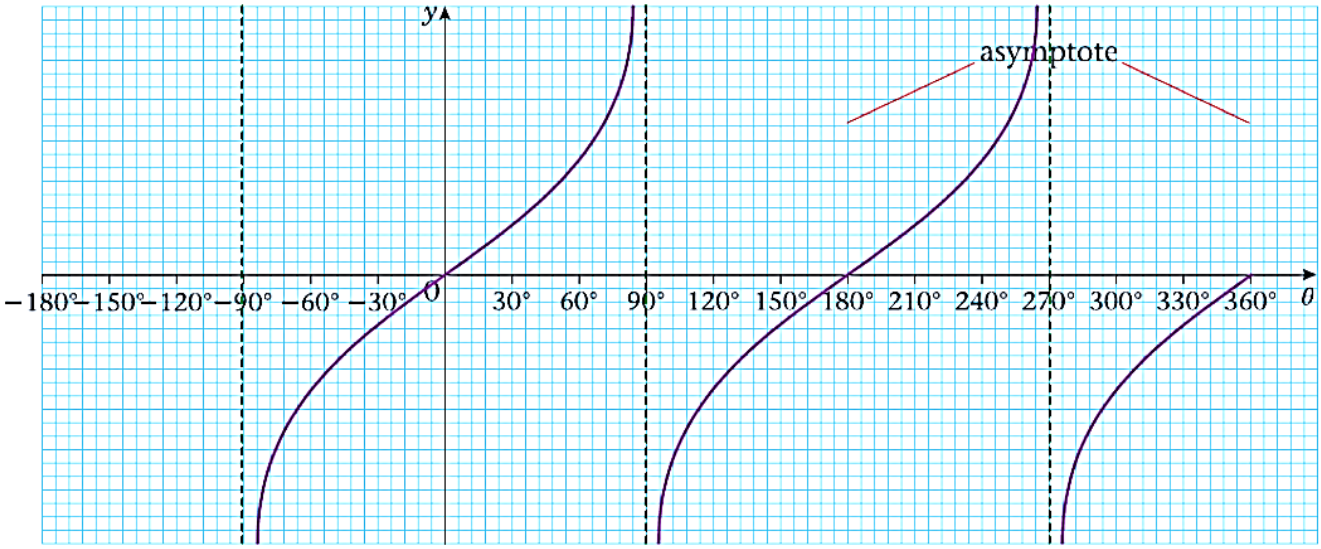
$y = \sin\theta$



$y = \cos\theta$



$y = \tan\theta$



Refer to transformation of graphs wherever needed.