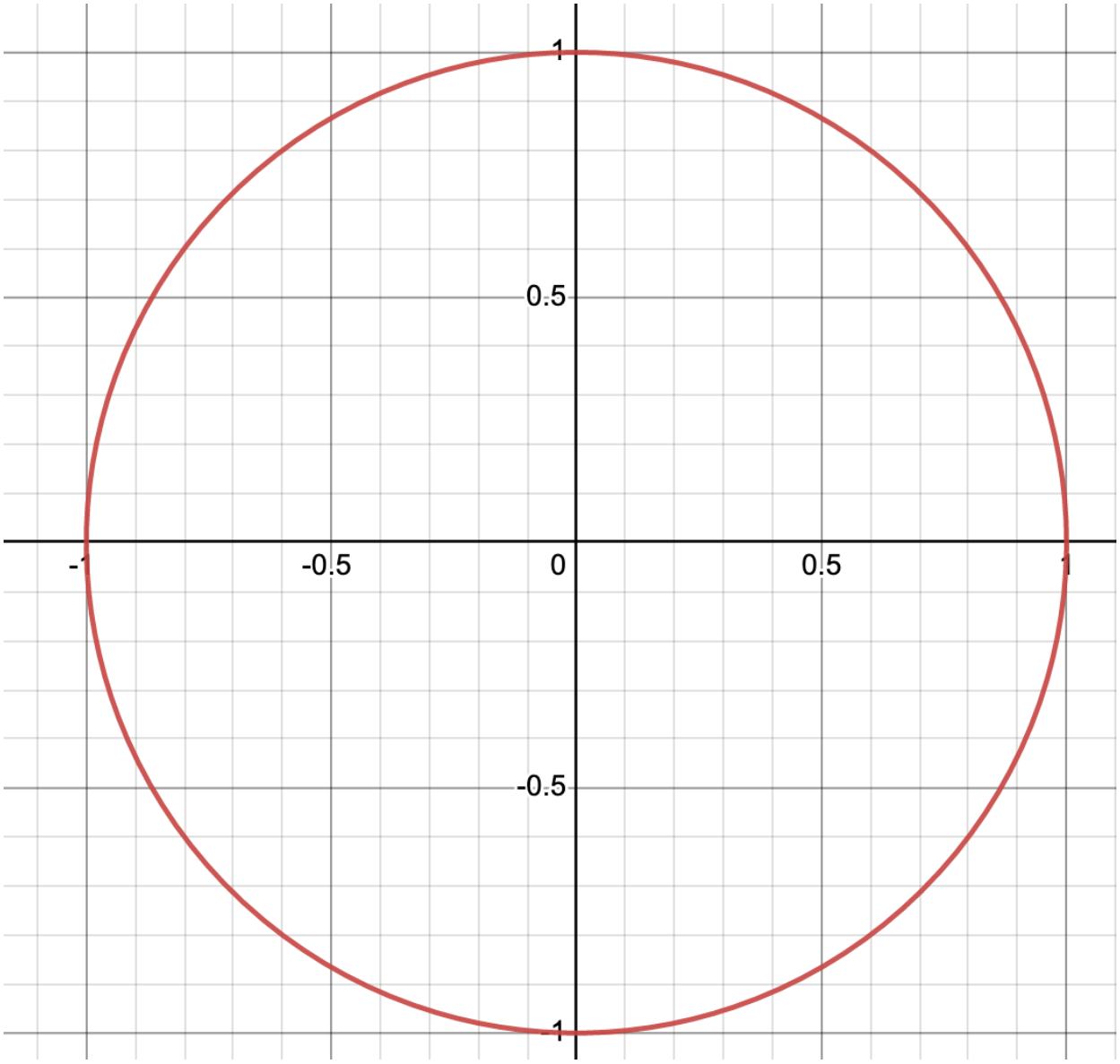
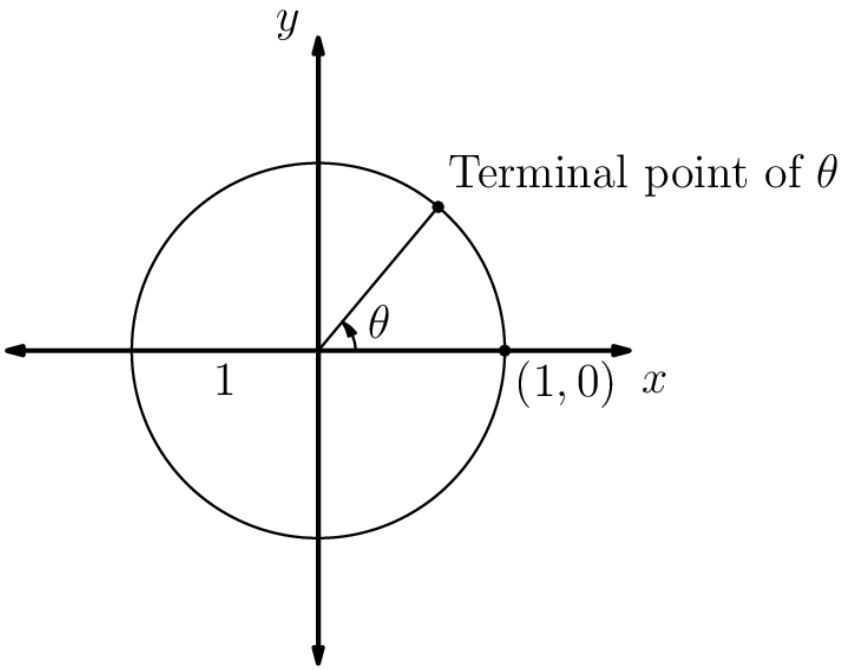
# 1 - Basic Trigonometry

## {Unit Circle}

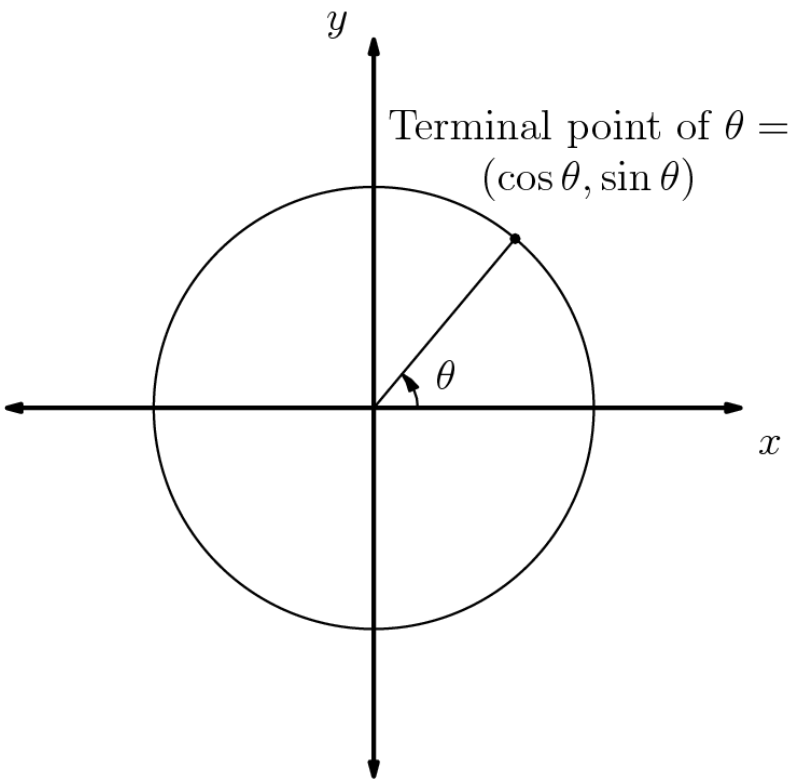



- Radius :: 1
- Terminal point of $\theta$ :: Start at (1, 0) and go **counterclockwise**
- If $\theta < 0$ :: Start at (1, 0) and go **clockwise**




## {Sin, Cos, Tan}

- Sine :: $sin\theta$ :: **X-coord** of unit circle coords
- Cosine :: $cos\theta$ :: **Y-coord** of unit circle coords
- Tangent :: $tan\theta = \frac{sin\theta}{cos\theta}$ :: $\frac{X-coord}{Y-coord}$




## {Reference Triangles}

- For $30°, 45°, 60°$ and angles of the sort
- Use **45-45-90** and **30-60-90** triangles

Vertical side : Horizontal side : Hypo

**45-45-90** :: $\frac{\sqrt{2}}{2} : \frac{\sqrt{2}}{2} : 1$

**30-60-90** :: $\frac{1}{2} : \frac{\sqrt{3}}{2} : 1$

## {Sin :: Basic Reference}

$\theta = 0°$ :: **1**

$\theta = 30°$ :: **$$\frac{1}{2}$$**

$\theta = 45^\circ$ :: $$\frac{1}{\sqrt{2}}$$

$\theta = 60^\circ$ :: $$\frac{\sqrt{3}}{2}$$

$\theta = 90^\circ$ :: 1

$\theta = 180^\circ$ :: 0

$\theta = 270^\circ$ :: -1