

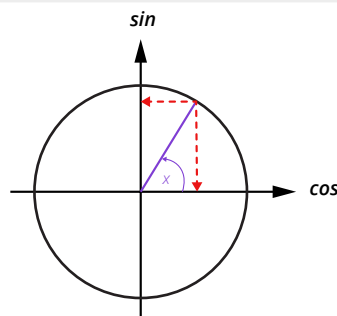
# CIRCULAR MEASURES

$$180^\circ = \pi \text{ rad}$$

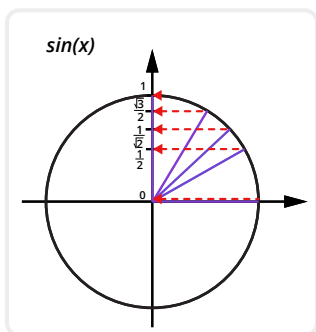
- ▶ when changing degrees to radians:  $\times \frac{\pi}{180}$
- ▶ when changing radians to degrees:  $\times \frac{180}{\pi}$

## UNIT CIRCLE

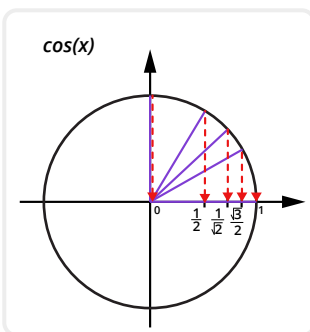
- ▶  $\cos(x)$  is the projection on the **x-axis**
- ▶  $\sin(x)$  is the projection on the **y-axis**



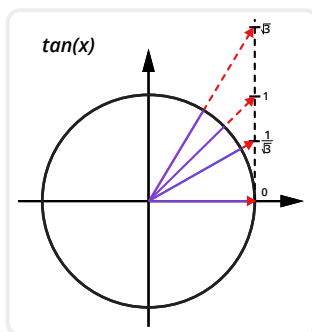
## EXACT VALUES OF TRIGONOMETRIC FUNCTIONS



- ▶  $\sin(0^\circ) = 0$
- ▶  $\sin(30^\circ) = \frac{1}{2}$
- ▶  $\sin(45^\circ) = \frac{1}{\sqrt{2}}$
- ▶  $\sin(60^\circ) = \frac{\sqrt{3}}{2}$
- ▶  $\sin(90^\circ) = 1$



- ▶  $\cos(0^\circ) = 1$
- ▶  $\cos(30^\circ) = \frac{\sqrt{3}}{2}$
- ▶  $\cos(45^\circ) = \frac{1}{\sqrt{2}}$
- ▶  $\cos(60^\circ) = \frac{1}{2}$
- ▶  $\cos(90^\circ) = 0$



- ▶  $\tan(0^\circ) = 0$
- ▶  $\tan(30^\circ) = \frac{1}{\sqrt{3}}$
- ▶  $\tan(45^\circ) = 1$
- ▶  $\tan(60^\circ) = \sqrt{3}$