

## Graphing Trig Functions Using Radians

Using radians, find the amplitude, period, vertical shift, and phase shift of each function. Then graph one period.

1)  $y = \frac{1}{2} \cdot \cos \theta$

2)  $y = 3 \tan \theta$

Amp:  $\frac{1}{2}$

Period:  $360^\circ$  or  $(2\pi)$

VS: none

PS: none

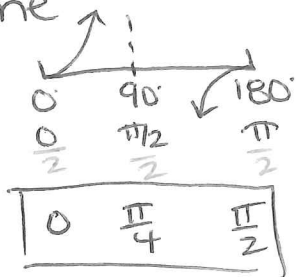
3)  $y = \tan 2\theta$

Amp: None

Period:  $\frac{180}{2} = 90^\circ$  or  $(\frac{\pi}{2})$

VS: none

PS: none



5)  $y = \frac{1}{2} \cdot \sin 3\theta + 1$

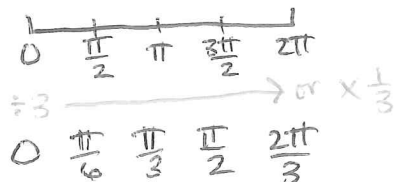
4)  $y = \sin \frac{\theta}{2}$

Amp:  $\frac{1}{2}$

Period:  $\frac{360}{3} = 120^\circ$  or  $(\frac{2\pi}{3})$

VS: up 1

PS: none



6)  $y = 3 \cos 2\theta + 2$

Graph each function using RADIANS. Identify all key parts.

$$7) y = 4\cos\frac{1}{2}\left(\theta - \frac{\pi}{3}\right) - 1$$

Amp: 4

$$\text{Period: } \frac{360}{1/2} = 720 \text{ or } \frac{2\pi}{1/2} = 4\pi$$

VS: down 1

PS: right  $\pi/3$

$$\left(0 \quad \frac{\pi}{2} \quad \pi \quad \frac{3\pi}{2} \quad 2\pi\right) \div \frac{1}{2} \text{ or } \times 2$$

period change

$$0 \quad \pi \quad 2\pi \quad 3\pi \quad 4\pi$$

$$+\frac{\pi}{3} \longrightarrow$$

$$\frac{\pi}{3} \quad \frac{4\pi}{3} \quad \frac{7\pi}{3} \quad \frac{10\pi}{3} \quad \frac{13\pi}{3}$$

$$9) y = \frac{1}{2} \cdot \tan 2\left(\theta + \frac{\pi}{6}\right) - 2$$

$$8) y = \frac{1}{2} \cdot \sin 4\left(\theta - \frac{\pi}{3}\right) - 1$$

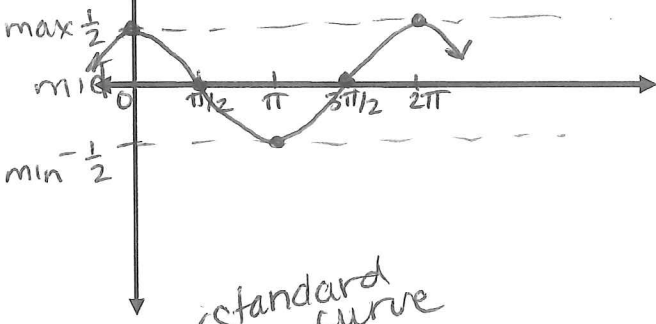
$$10) y = 3\cos 2\left(\theta + \frac{\pi}{4}\right) - 2$$

$$11) y = 2\tan\frac{1}{2}\left(\theta - \frac{\pi}{2}\right) - 2$$

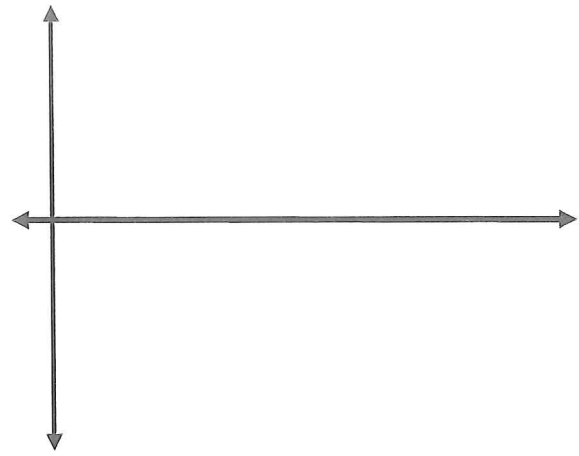
$$12) y = 4\sin\frac{1}{2}\left(\theta + \frac{\pi}{4}\right) + 1$$

# Notes/HW - Graphing in Radians

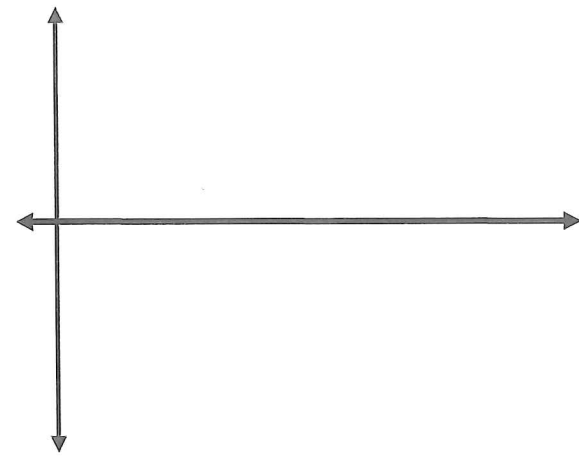
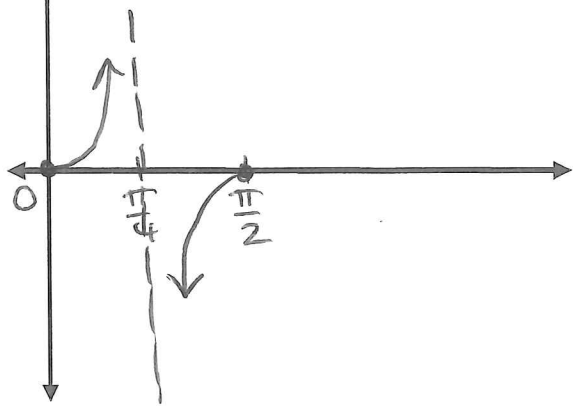
①  $y = \frac{1}{2} \cos \theta$



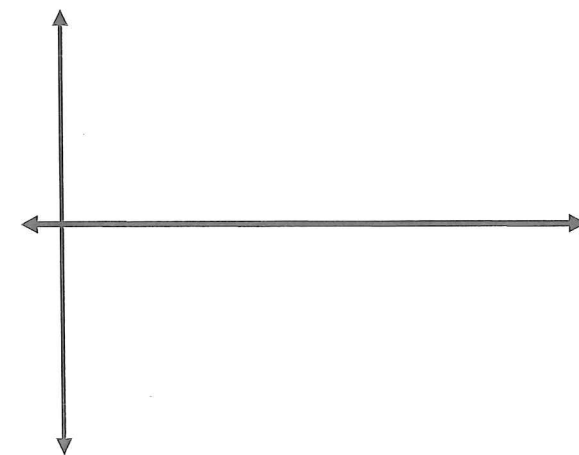
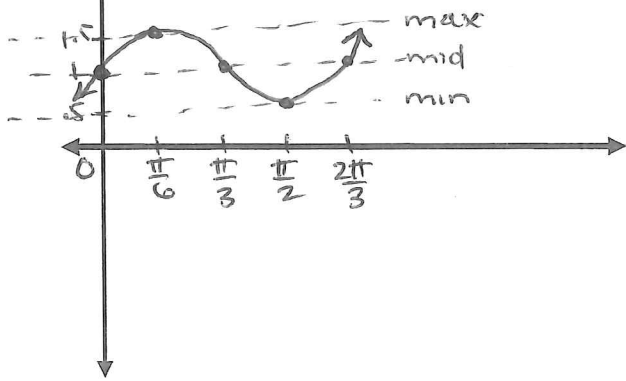
standard curve



②  $y = \tan 2\theta$



③  $y = \frac{1}{2} \sin 3\theta + 1$



④  $y = 4 \cos \frac{1}{2}(\theta - \frac{\pi}{3}) - 1$

