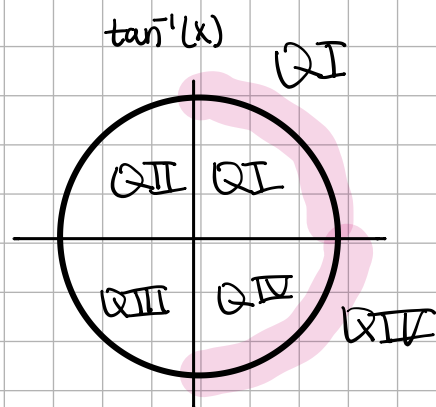
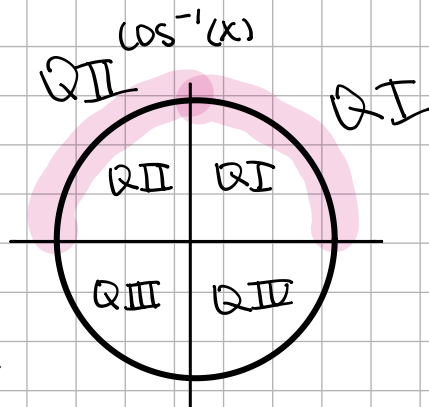
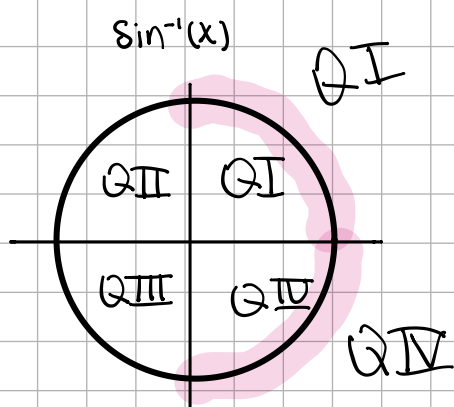


Name: _____ Date: 9/25/25

Session 6 : A unit circle is very helpful tool to use for this worksheet! :)

Warm up: Circle or highlight the quadrants we use to evaluate each inverse trig function



Evaluate the following inverse functions

$\sin^{-1}(\frac{1}{2})$ $\sin \theta = \frac{1}{2}$ only looking in $\theta \in \{QI, QIV\}$, $\sin$ is only positive in $\theta \in \{QI, QIV\}$

$\theta = 30^\circ$ or $\frac{\pi}{6}$

$\sin^{-1}(\sin \frac{\pi}{4})$ $\sin \frac{\pi}{4}$ is $\frac{\sqrt{2}}{2} \rightarrow \sin^{-1}(\frac{\sqrt{2}}{2})$ $\sin \theta = \frac{\sqrt{2}}{2}$

$\theta = 45^\circ$ or $\frac{\pi}{4}$

$\tan^{-1}(-\sqrt{3})$ $\tan \theta = -\sqrt{3}$ $\tan^{-1}$ is negative in $\theta \in \{QII, QIV\}$

$\theta = -\frac{\pi}{3}$ or -60°

$\cos^{-1}(\cos(\frac{5\pi}{3}))$ $\cos(\frac{5\pi}{3}) = \frac{1}{2}$ $\cos^{-1}(\frac{1}{2}) = \cos \theta = \frac{1}{2}$

$\theta = \frac{\pi}{3}$ or 60°

Find the amplitude and periods of the functions below

$$y = \cos \frac{2x}{k}$$

$$\text{amplitude} = 1$$

$$\text{period} = \frac{2\pi}{k}$$

$$\frac{2\pi}{2} = \pi$$

$$y = a \sin kx$$

$$|a| = \text{amplitude}$$

$$y = 3 \sin 2\pi x$$

$$\text{amplitude} = 3$$

$$\text{period} = \frac{2\pi}{k}$$

$$\frac{2\pi}{2\pi} = 1$$

$$\text{Period} = 1$$

Find the horizontal shift of the functions below

$$y = \cos \left(x - \frac{\pi}{2} \right)$$

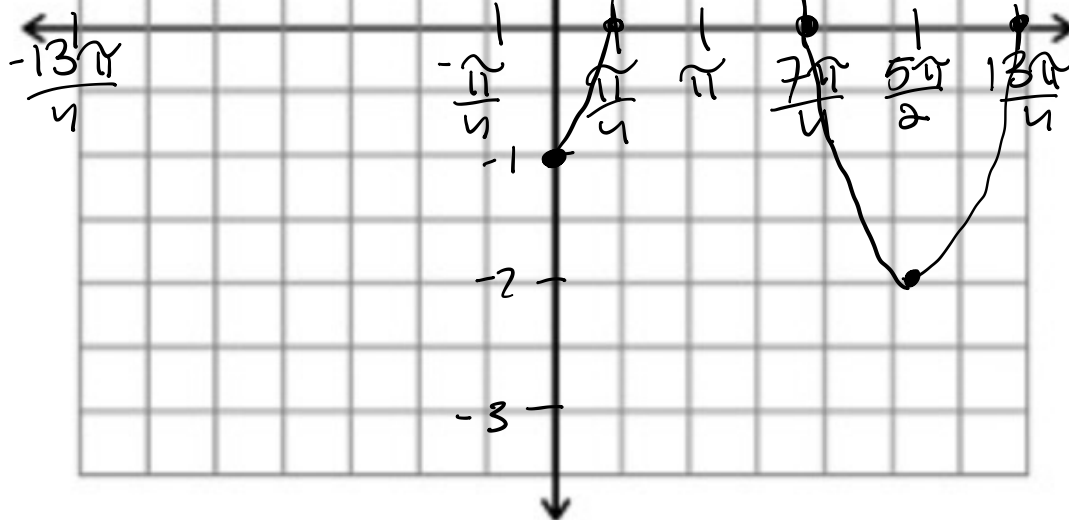
Horizontal shift is just

$$\frac{\pi}{2}$$

you don't factor anything out this time. k is 1

Graph the function below

were only doing one half of the graph



$$y = 2 \sin\left(\frac{2}{3}x - \frac{\pi}{6}\right)$$

hint: find amplitude, period, and horizontal shift

amp = 2

$$\frac{2\pi}{\frac{2}{3}}$$

$$\frac{2\pi}{1} \cdot \frac{3}{2}$$

3π = period

$$\frac{2\pi}{6} \cdot \frac{1}{2}$$

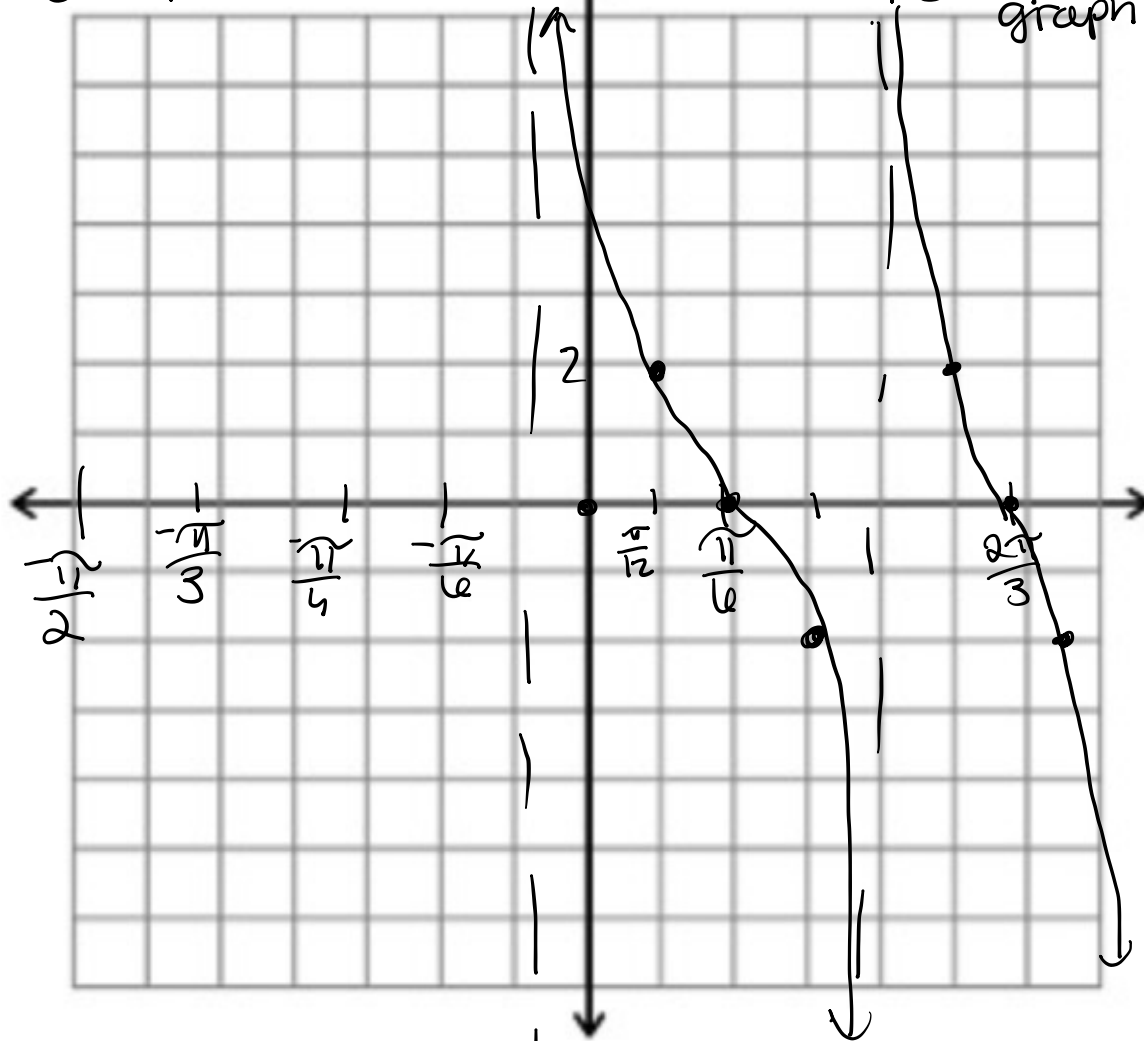
$$\frac{2\pi}{6} \cdot \frac{3}{2}$$

$$\left[\frac{\pi}{4} \right]$$

horizontal shift

still negative so to the right

Graph the function below 2 Really rough graph



$$y = -2 \tan(2x - \frac{\pi}{3})$$

hint: find amplitude, period, and horizontal shift

$$\begin{aligned} \text{amp} &= 2 \\ |a| &= 2 \end{aligned}$$

$$\text{period} = \frac{\pi}{2}$$

$$\text{period} = \frac{\pi}{2}$$

$$\frac{\frac{\pi}{3}}{2}$$

$$\frac{\pi}{3} \cdot \frac{1}{2} \rightarrow$$

$$\frac{\pi}{6}$$

horizontal shift