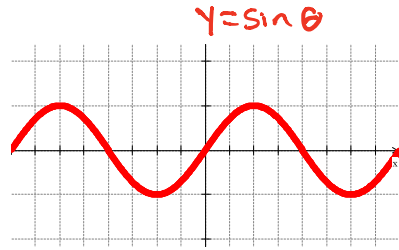
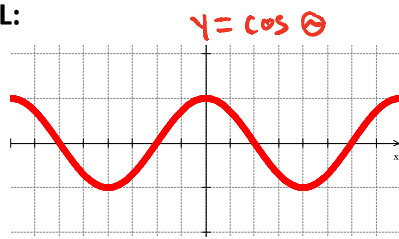


Write your questions and thoughts here!

RECALL:



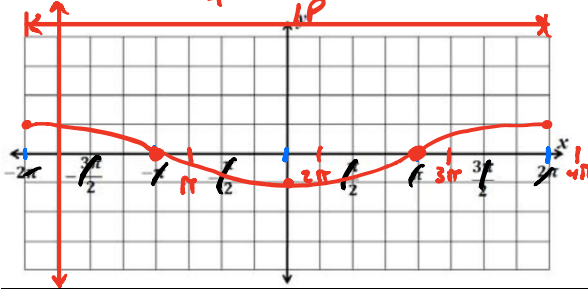
Phase Shift:

$$y = a \sin(b(x - h)) + k$$

*Vertical Stretch/Shrink* (points to  $a$ )  
*Vertical Reflect* (points to  $a$ )  
*Horizontal Stretch/Shrink* (points to  $b$ )  
*Horizontal Shift* (points to  $h$ )  
*Vertical Shift* (points to  $k$ )

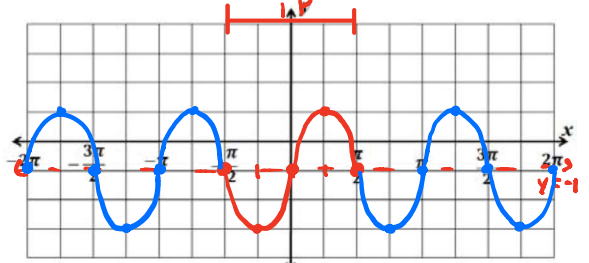
1.  $y = \cos\left(\frac{1}{2}\left(x + \frac{\pi}{4}\right)\right)$

Amp:  $|1|$       Period:  $4\pi = 2\pi \cdot 2$   
 A:  $1$   
 Phase Shift:  $-\frac{\pi}{4}$       vD:  $0$



2.  $y = -2 \sin(2x - \pi) - 1$   
 $= -2 \sin\left[2\left(x - \frac{\pi}{2}\right)\right] - 1$

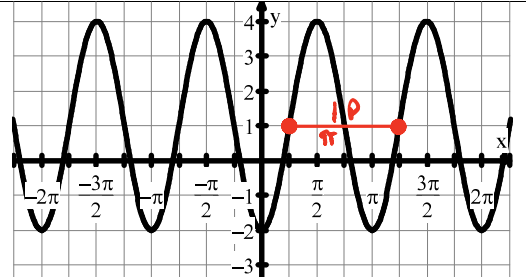
Amp:  $|-2| = 2$       Period:  $\pi = 2\pi \cdot \frac{1}{2}$   
 A:  $-2$   
 Phase Shift:  $\frac{\pi}{2}$       vD:  $-1$



3. Write the equation of the following sine curve. Use a positive leading coefficient  $a$  and the closest phase shift possible (left or right).

$2\pi \cdot \frac{1}{2} = \text{Period}$   
 $2\pi \cdot \frac{1}{2} = \pi$   
 $2\pi = \pi b$   
 $\pi = b$

$$y = 3 \left[ 2 \left( \theta - \frac{\pi}{4} \right) \right] + 1$$



$f(\theta) = \tan \theta$

The Unit Circle

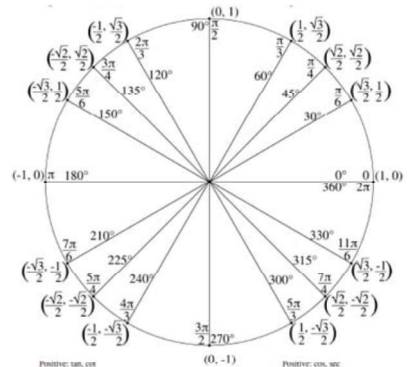
| $\theta$         | $f(\theta)$ |
|------------------|-------------|
| 0                | 0           |
| $\frac{\pi}{4}$  | 1           |
| $\frac{\pi}{2}$  | und         |
| $\frac{3\pi}{4}$ | -1          |
| $\pi$            | 0           |

0-1-0-1-0-1-0-1

| $\theta$         | $f(\theta)$ |
|------------------|-------------|
| $\frac{5\pi}{4}$ | 1           |
| $\frac{3\pi}{2}$ | und         |
| $\frac{7\pi}{4}$ | -1          |
| $2\pi$           | 0           |

1-0-1-0-1-0-1-0

$$\tan \theta = \frac{\sin \theta}{\cos \theta} = \frac{y}{x}$$

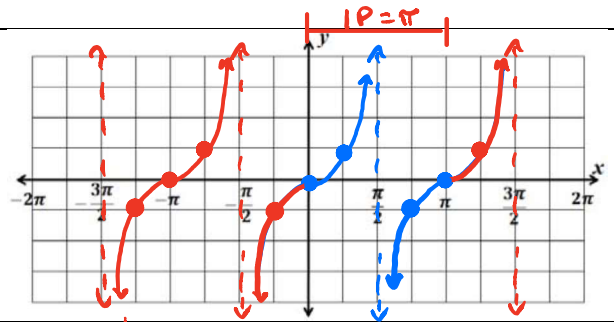


# 10.2 Phase Shift and Tangent

Write your questions and thoughts here!

Tangent Parent Function Graph

$$y = \tan x$$



Standard equation:

$$y = a \tan(b(x - h)) + k$$

Period:  $\pi$

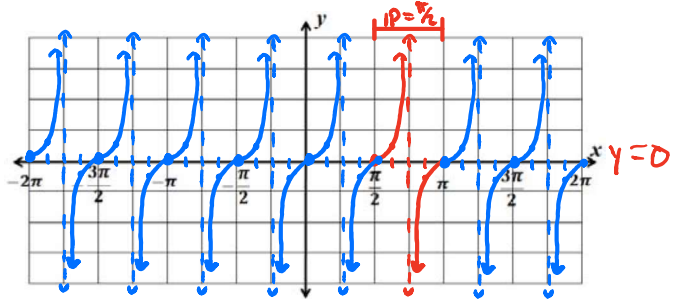
*Vertical Stretch/Stretch*  
*Vertical Reflect*  
*Horizontal Stretch/Stretch*  
*Horizontal Shift*  
*Vertical Shift*

4.  $y = \frac{1}{2} \tan(2x - \pi)$

$$y = \frac{1}{2} \tan\left[2\left(x - \frac{\pi}{2}\right)\right]$$

Period:  $\frac{\pi}{2}$

Phase Shift:  $\frac{\pi}{2}$



Now summarize what you learned!

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## Skillz Review: Complex Fraction (Fraction in a fraction)

|  |  |   |
|--|--|---|
| $\frac{\left(\frac{2}{5}\right) \cdot 10^2}{\left(\frac{3}{10}\right) \cdot 10} = \frac{4}{3}$ | $\frac{\left(\frac{1}{\sin x}\right) \cos x}{\left(\frac{1}{\cos x}\right) \cos x} = \frac{\cos x}{\sin x} = \cot x$ | $\frac{\csc \theta}{\cot \theta} = \frac{\frac{1}{\sin \theta} \cdot \sin \theta}{\frac{\cos \theta}{\sin \theta}} = \frac{1}{\cos \theta} = \sec \theta$ |
|--|--|---|

## Skillz Review: Add/Subtract Fractions

|   |  |   |
|---|--|---|
| $\frac{3}{5} + \frac{1.5}{2.5} = \frac{6}{10} + \frac{5}{10} = \frac{11}{10}$ | $\frac{5}{\cos x} + \frac{1 \cdot \cos x}{5 \cos x} = \frac{5 + \cos x}{5 \cos x}$ | $\frac{\sin \theta}{1 \text{ sub}} - \frac{1}{\sin \theta} = \frac{\sin^2 \theta - 1}{\sin \theta}$ |
|---|--|---|