Summary:

For a Trigonometric function of the form $y = af\left[b\left(x + \frac{c}{b}\right)\right] + d$,

Amplitude $= |a|$ (note that amplitude is always positive)

Period $= \dfrac{original\ period\ of\ the\ function\ (\pi\ or\ 2\pi)}{|b|}$

Horizontal shift $= \dfrac{c}{b}$, $\begin{matrix} left\ if\ \frac{c}{b}>0 \\ right\ if\ \frac{c}{b}<0 \end{matrix}$

Vertical shift $= d$, $\begin{matrix} up\ if\ d>0 \\ down\ if\ d<0 \end{matrix}$

$y = -2\cos\left(\frac{\pi}{3}x - \frac{3\pi}{2}\right) + 1$

$= -2\cos\left[\frac{\pi}{3}\left(x - \frac{9}{2}\right)\right] + 1$

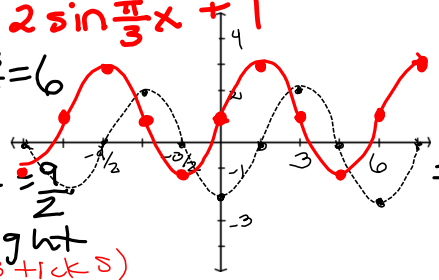
$= 2\sin\frac{\pi}{3}x + 1$

amplitude: 2

period: $\frac{2\pi}{\pi/3} = \frac{2\pi}{1}\cdot\frac{3}{\pi} = 6$

horiz. shift: $\frac{3\pi}{2} \div \frac{\pi}{3} = \frac{3\pi}{2}\cdot\frac{3}{\pi} = \frac{9}{2}$ right (3 ticks)

vert. shift: 1 up (1 tick)



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

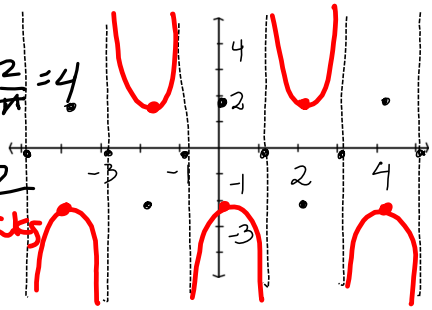
$= -2\sec\frac{\pi}{2}x$

amplitude: 2

period: $\frac{2\pi}{\pi/2} = \frac{2\pi}{1}\cdot\frac{2}{\pi} = 4$

horiz. shift: $\frac{\pi}{\pi/2} = \frac{\pi}{1}\cdot\frac{2}{\pi} = 2$ right 2 ticks

vert. shift: N/A



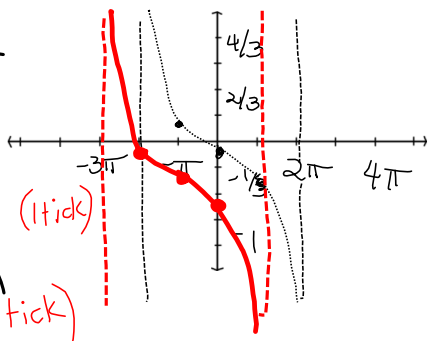
$y = -\frac{1}{3}\tan\left(\frac{1}{4}x + \frac{\pi}{4}\right) - \frac{1}{3}$

amplitude: 1/3

period: $\frac{\pi}{1/4} = 4\pi$

horiz. shift: $\frac{\pi/4}{1/4} = \pi$ left (1 tick)

vert. shift: 1/3 down (1 tick)

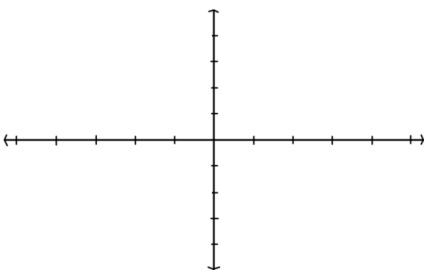


amplitude:

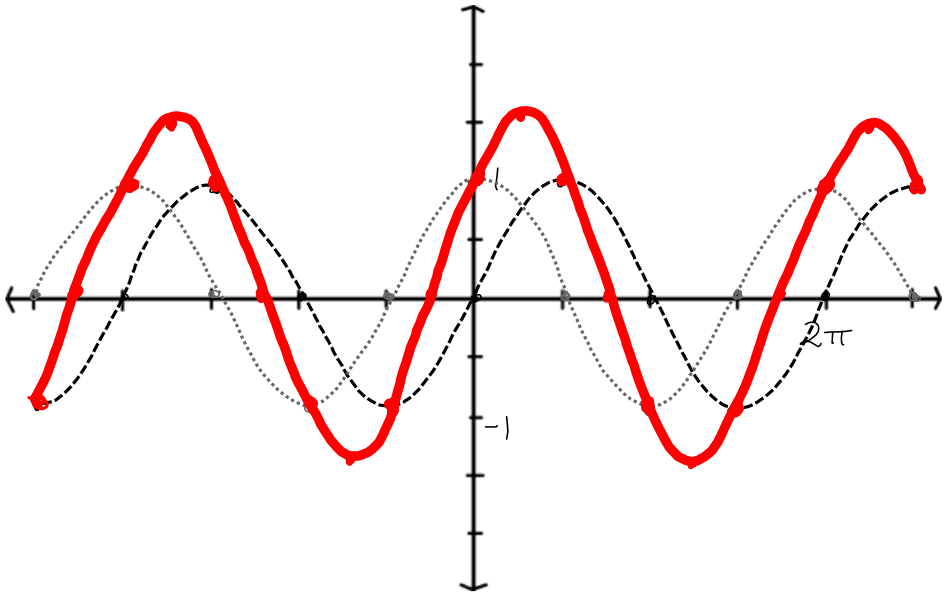
period:

horiz. shift:

vert. shift:



$y = \sin x + \cos x$



$y = 2\sin x - \cos 2x$

$= 2\sin x + (-\cos 2x)$

amp 2 per 2π | $\frac{1}{\pi}$