Cosine Graph

$$y = a \cos bx + c$$
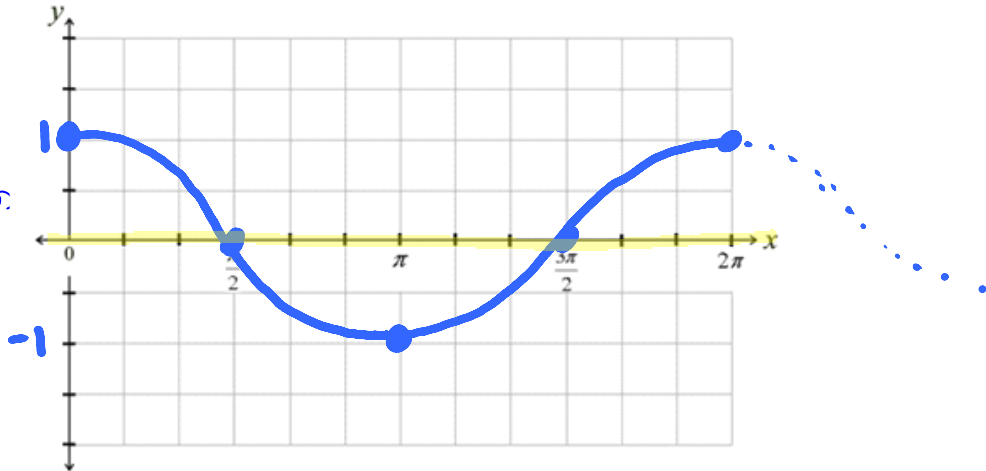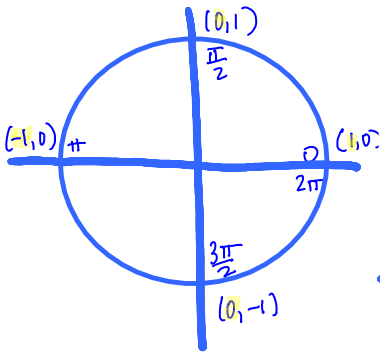
↑ amplitude   ↑ frequency   ↑ vertical shift

$|a|$ = amplitude $\frac{max - min}{2}$

b = frequency — number of cycles between 0 and 2π

period = $\frac{2\pi}{b}$ — length of one cycle

c = vertical shift

y = cos x   amp = 1   period = 2π

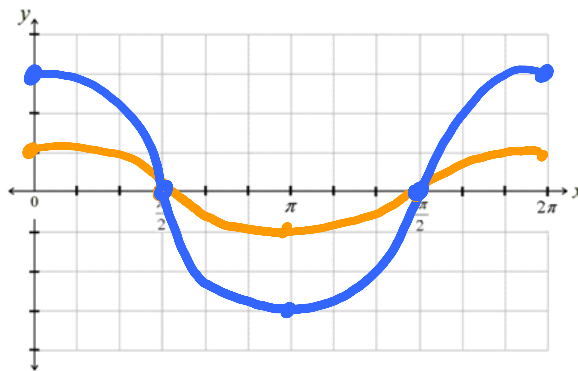# y = 3 cos x
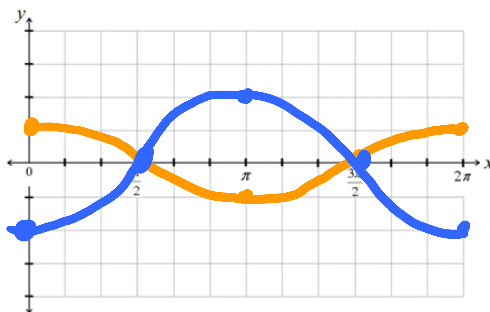
amp = 3
frequency = 1
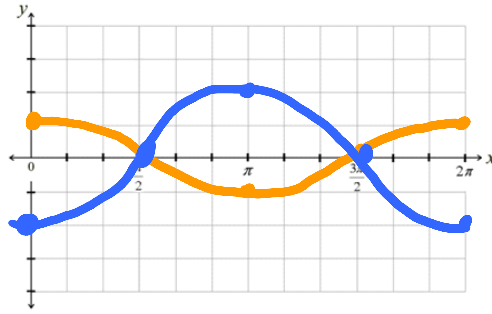period = $\frac{2\pi}{1} = 2\pi$

y = -2 cos x

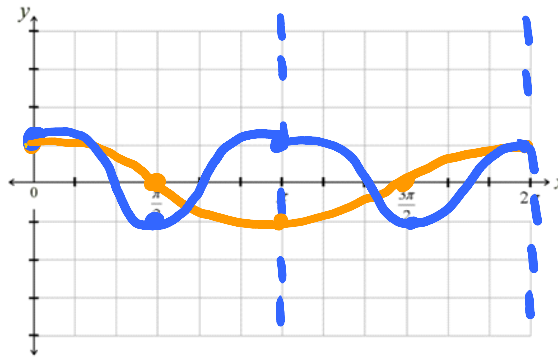amplitude = 2
frequency = 1
period = $\frac{2\pi}{1} = 2\pi$

$y = -2\cos x$

amplitude = 2
frequency = 1
period = $\dfrac{2\pi}{1} = 2\pi$

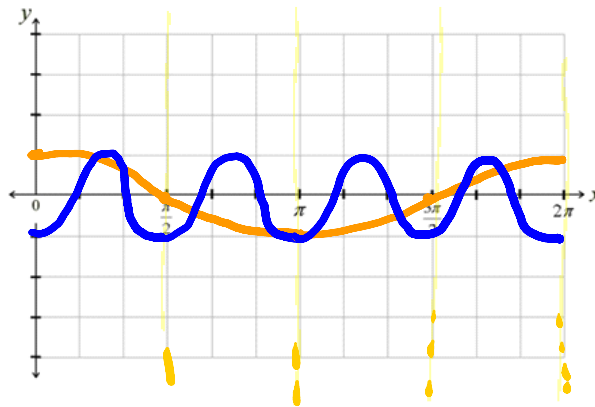$y = \cos 2x$

amplitude = 1
frequency = 2
period = $\dfrac{2\pi}{2} = \pi$

$y = -\cos 4x$

amp = 1
frequency = 4
period = $\dfrac{2\pi}{4} = \dfrac{\pi}{2}$

$y = 3\cos 2x - 1$

amplitude = 3
frequency = 2
period = $\dfrac{2\pi}{2} = \pi$

shift down 1

final →