

5-4 Graphing Trigonometric Functions

Objectives:

- I can graph basic sine, cosine, and tangent functions
- I can use transformations to graph sine and cosine functions
- I can identify characteristics of trigonometric functions

$$f(x) = \underline{a} \sin(\underline{b}(x - h)) + k$$

a: Amplitude (vertical): height

b: Period (horizontal): how long it takes to repeat Period: $\frac{2\pi}{|b|}$

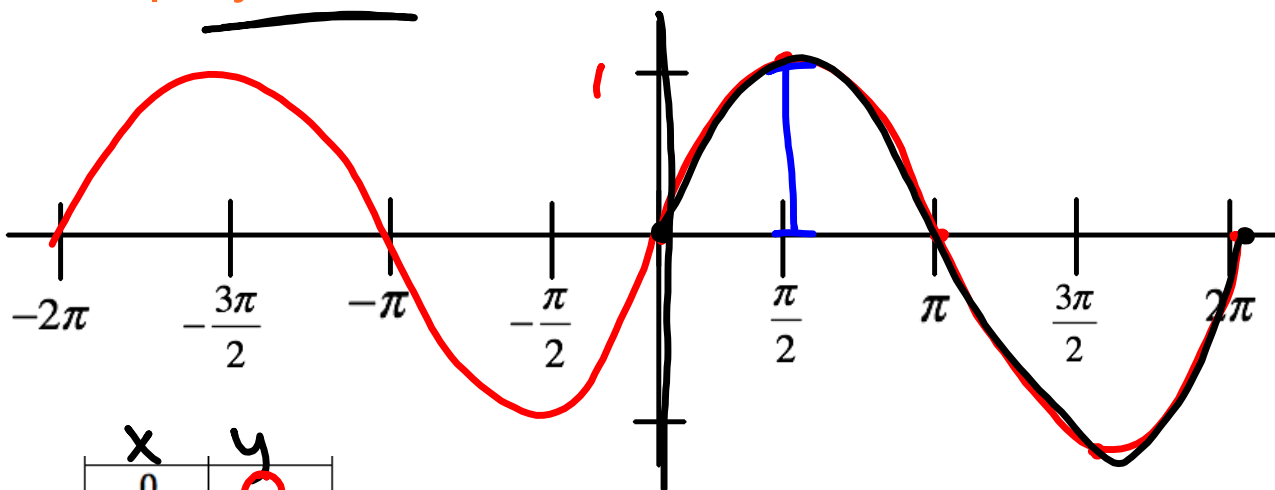
h: Phase Shift (horizontal): h

k: Vertical Shift (vertical): k

Video of sin graph and unit circle:

 https://www.youtube.com/watch?v=Ohp6Okk_tww

Graph $y = \sin x$

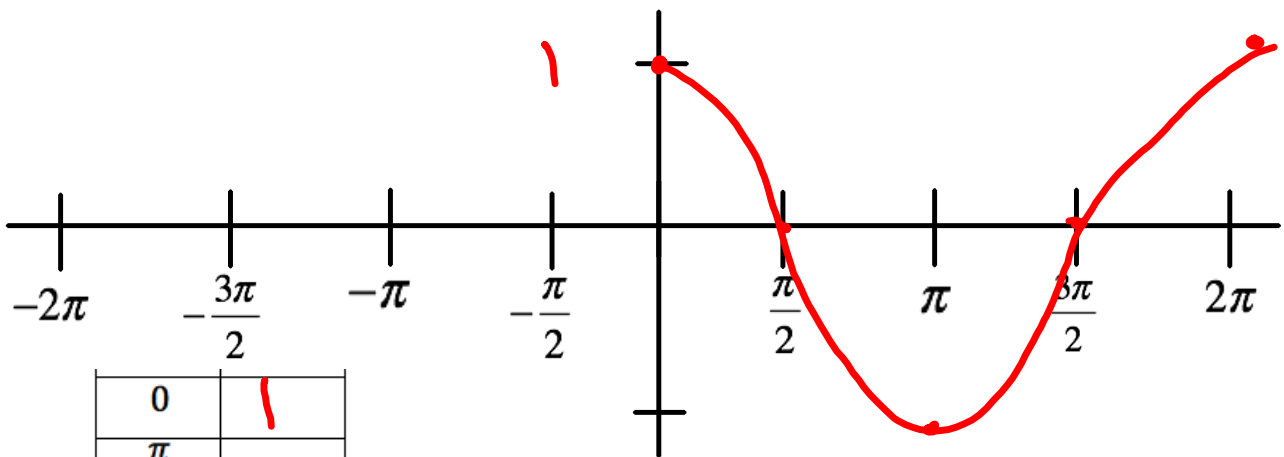


x	y
0	0
$\frac{\pi}{2}$	1
π	0
$\frac{3\pi}{2}$	-1
2π	0

Amplitude: 1

Period: 2π

Frequency:

Graph $y = \cos x$ 

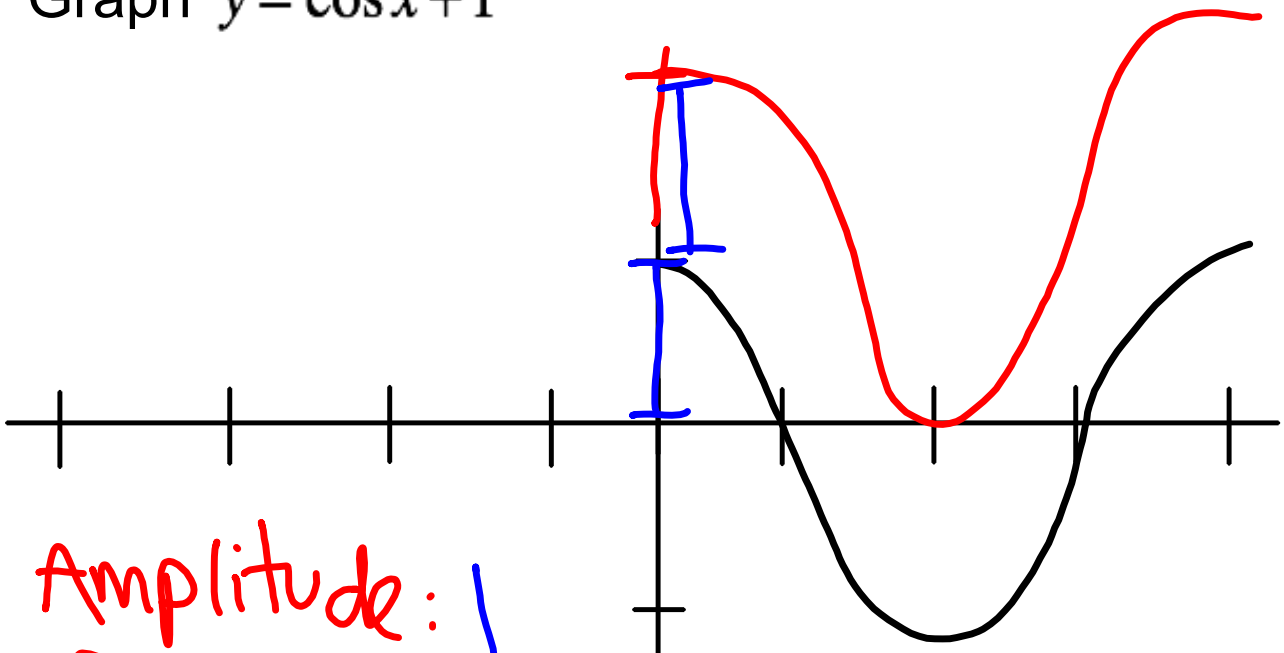
0	1
$\frac{\pi}{2}$	0
π	-1
$\frac{3\pi}{2}$	0
2π	1

Amplitude: 1

Period: 2π

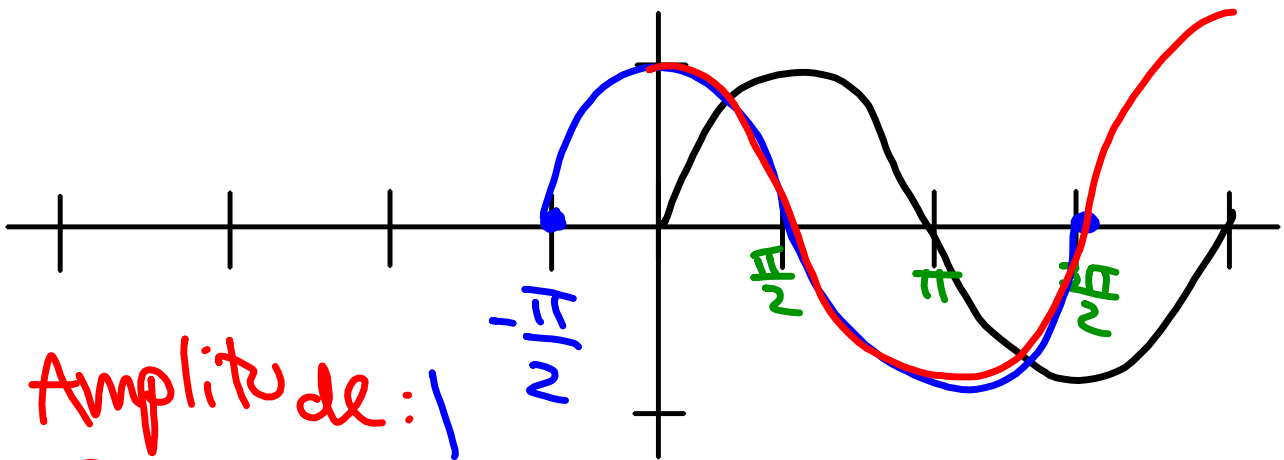
Frequency:

Graph $y = \cos x + 1$



Amplitude: 1
Period: 2π

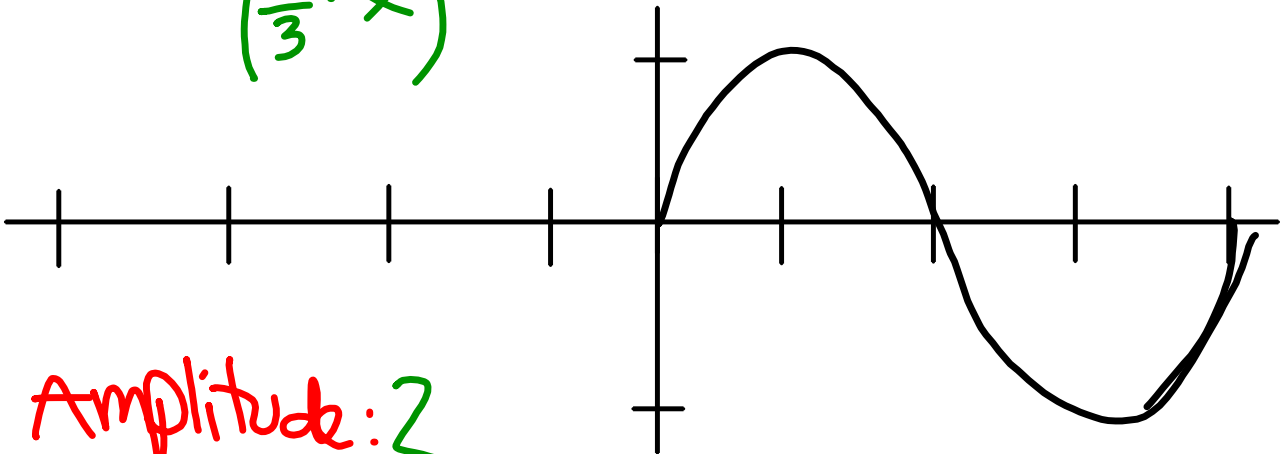
$$y = \sin\left(x + \frac{\pi}{2}\right)$$



Amplitude: 1
Period: 2π

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

$$\left(\frac{1}{3} \cdot x\right)$$



Amplitude: 2

Period: $\frac{2\pi}{\frac{1}{3}}$