

Chapter 8

Lt 1 Day 1

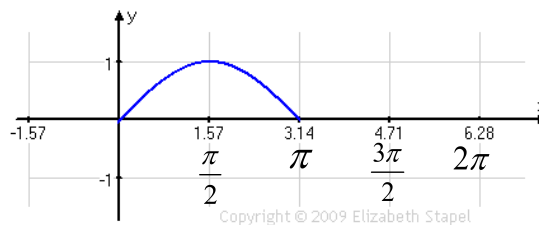
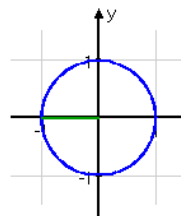
I can graph the six trig functions and give key information including zeros, asymptotes, end behavior, period, midline, and amplitude.

Sine and Cosine graphs with period and amplitude.

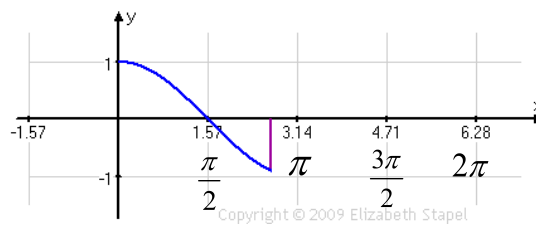
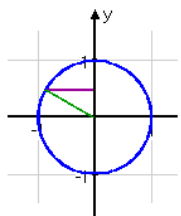
Amplitude?

Sine

Period?



Cosine



Sine

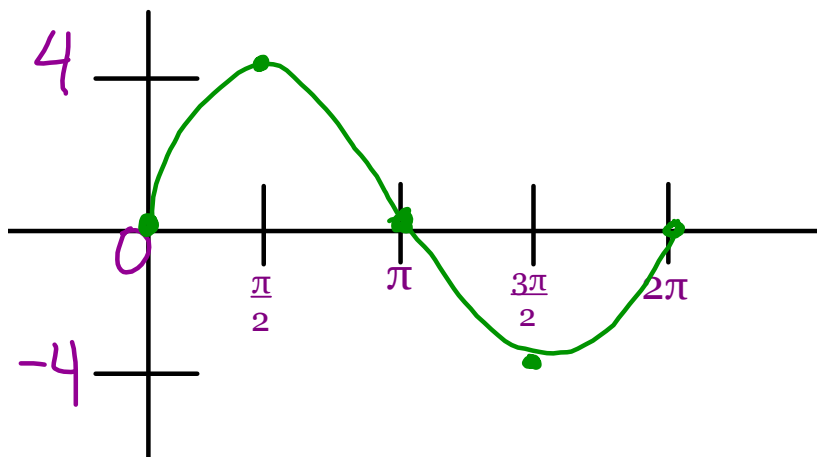
$$y = A \sin B(x \pm C) \pm D$$

Cosine

$$y = A \cos B(x \pm C) \pm D$$

- $|A| = \text{Amplitude}$ (always positive and it's how high the graph stretches vertically from the midline)
- $B = \text{Period}$ (how long it takes to make one complete curve) $\frac{2\pi}{B}$
- $\pm C = \text{Horizontal Shift}$ (how far the graph moves left or right)
- $\pm D = \text{Vertical Shift}$ (how far the graph moves up or down)

1.) $y = 4 \sin x$



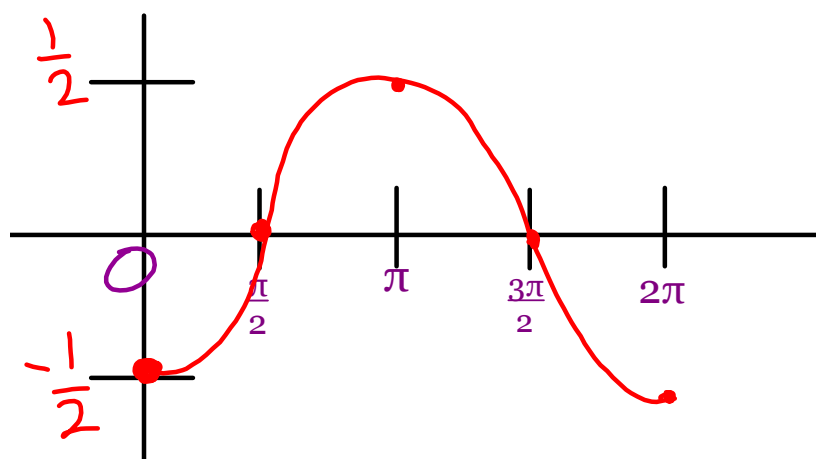
Amplitude: 4

Period: 2π

Domain: $(-\infty, \infty)$

Range: $[-4, 4]$

$$2.) y = -\frac{1}{2} \cos x$$



Amplitude: $\frac{1}{2}$

Period: 2π

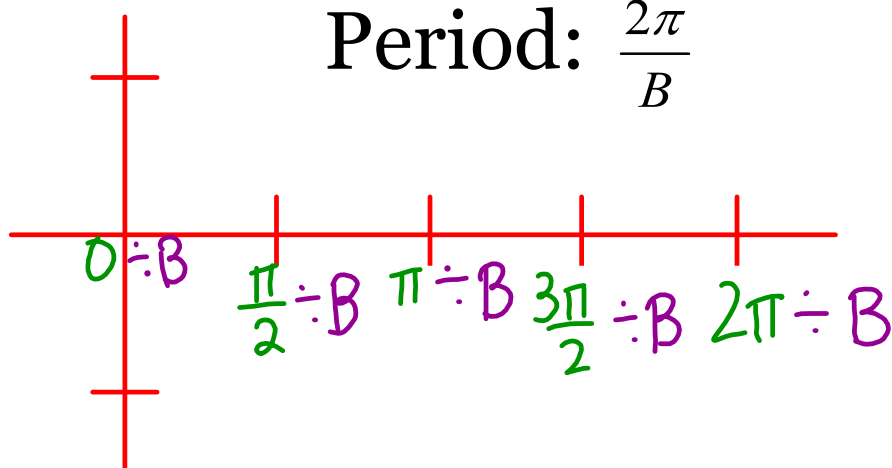
Domain: $(-\infty, \infty)$

Range: $[-\frac{1}{2}, \frac{1}{2}]$

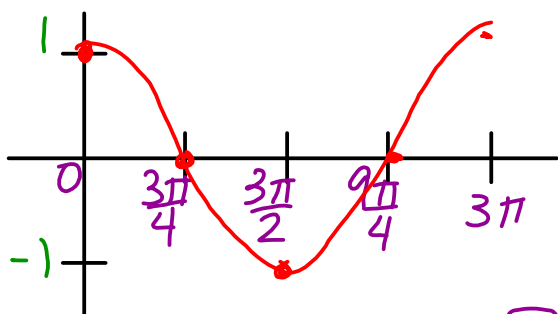
$$y = A \sin B(x \pm C) \pm D$$

$$y = A \cos B(x \pm C) \pm D$$

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



$$3.) y = \cos \frac{2}{3}x \rightarrow \frac{2\pi}{1} \div \frac{2}{3} = \frac{2\pi}{1} \cdot \frac{3}{2} = \frac{6\pi}{2} = 3\pi$$

Amplitude: 1Period: 3π

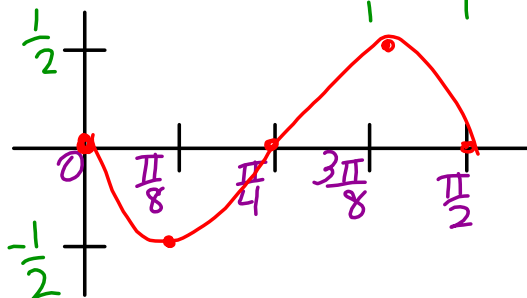
Domain: _____

Range: _____

$$\begin{aligned} 0 \div \frac{2}{3} &\rightarrow 0 \cdot \frac{3}{2} = 0 \\ \frac{\pi}{2} \div \frac{2}{3} &\rightarrow \frac{\pi}{2} \cdot \frac{3}{2} = \frac{3\pi}{4} \\ \pi \div \frac{2}{3} &\rightarrow \frac{\pi}{1} \cdot \frac{3}{2} = \frac{3\pi}{2} \\ \frac{3\pi}{2} \div \frac{2}{3} &\rightarrow \frac{3\pi}{2} \cdot \frac{3}{2} = \frac{9\pi}{4} \\ 2\pi \div \frac{2}{3} &\rightarrow \frac{2\pi}{1} \cdot \frac{3}{2} = \frac{6\pi}{2} = 3\pi \end{aligned}$$

$$4.) y = -\frac{1}{2} \sin 4x$$

$$\frac{2\pi}{1} \div 4 = \frac{2\pi}{1} \cdot \frac{1}{4} = \frac{2\pi}{4} =$$

Amplitude: 1/2Period: π/2

Domain: _____

Range: _____

$$\begin{aligned} 0 \div 4 &\rightarrow 0 \cdot \frac{1}{4} = 0 \\ \frac{\pi}{2} \div 4 &\rightarrow \frac{\pi}{2} \cdot \frac{1}{4} = \frac{\pi}{8} \\ \pi \div 4 &\rightarrow \frac{\pi}{1} \cdot \frac{1}{4} = \frac{\pi}{4} \\ \frac{3\pi}{2} \div 4 &\rightarrow \frac{3\pi}{2} \cdot \frac{1}{4} = \frac{3\pi}{8} \\ 2\pi \div 4 &\rightarrow \frac{2\pi}{1} \cdot \frac{1}{4} = \frac{2\pi}{4} = \frac{\pi}{2} \end{aligned}$$

