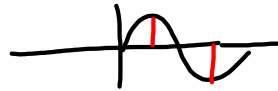


6.4 Amplitude and period of Sine & Cosine Functions

↑
Height of the wave above/below x-axis



Ampl. of Sine & cosine $\rightarrow y = A \sin \theta$ $|A| = \text{Amplitude}$
 $y = A \cos \theta$

Ex
 $y = 2 \cos \theta$ $y = \frac{1}{2} \sin \theta$
 Ampl. = 2 Ampl. = $\frac{1}{2}$

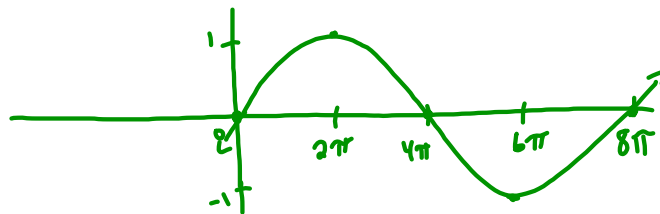
Period of sine & cosine $\rightarrow y = \sin k\theta$ $\rightarrow \frac{2\pi}{k}, k > 0$
 $y = \cos k\theta$

Ex $y = \cos \frac{\theta}{4}$ $k = \frac{1}{4}$

period $\rightarrow \frac{2\pi}{\frac{1}{4}} = 8\pi$

Ex $y = \sin \frac{\theta}{4}$

Ampl. = 1 period = $\frac{2\pi}{k} = \frac{2\pi}{\frac{1}{4}} = 8\pi$



Note: Period affects the horizontal axis
 amplitude affects the vertical axis

Ex Write a sine fn. given:

Ampl. = 2

period = $\frac{\pi}{2}$

$\frac{2\pi}{\frac{1}{2}\pi} = 4\theta$
 $y = \pm 2 \sin 4\theta$

Ex Write a cosine fn. given:

Ampl. = 5

period = 2π

$\frac{2\pi}{2\pi} = 1$
 $y = \pm 5 \cos \theta$