

ALG III 5/8/18

Name: _____

Amplitude and Vertical Shift

Warm Up: Sketch.

$f(\theta) = \sin \theta$

Pattern: (mid, max, mid, min)

Amplitude: $\frac{\text{max} - \text{min}}{2} = 1$

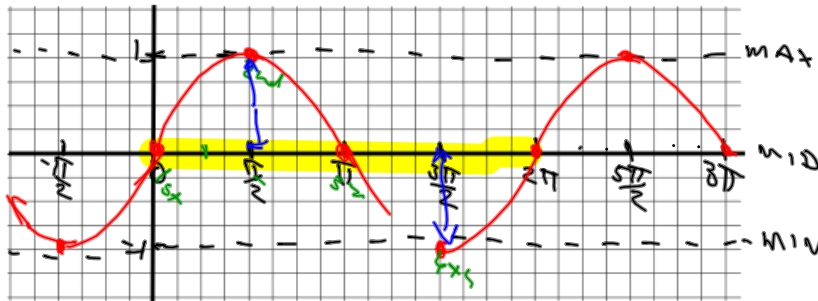
Period: 2π length of one cycle

Vert. Shift: none

Scale: $\frac{2\pi}{4} = \frac{\text{Period}}{4} = \frac{\pi}{2}$

Horizontal Shift: none

Key Values: $0, \frac{\pi}{2}, \pi, \frac{3\pi}{2}, 2\pi, \dots$



$f(\theta) = \cos \theta$

Pattern: max mid min mid max

Amplitude: 1

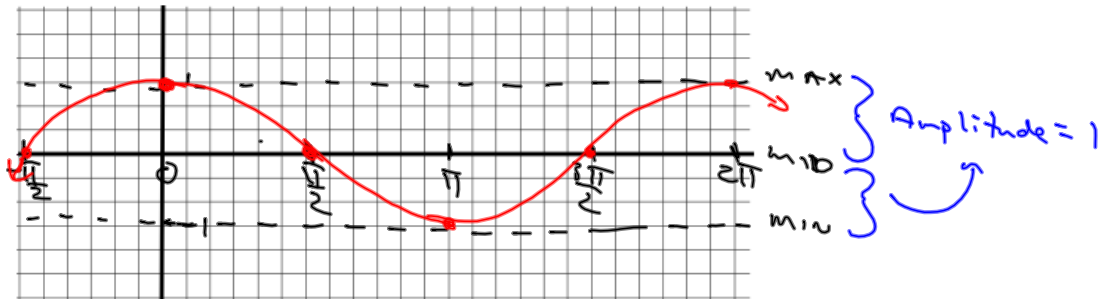
Period: 2π

Vert. Shift: 0

Increment: $\frac{\text{Period}}{4} = \frac{2\pi}{4} = \frac{\pi}{2}$

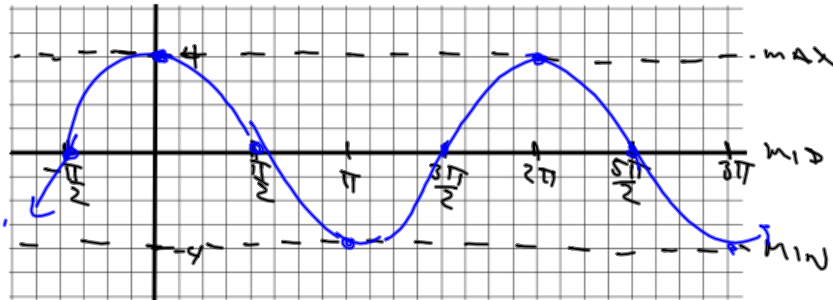
Horizontal Shift: 0

Key Values: $0, \frac{\pi}{2}, \pi, \frac{3\pi}{2}, 2\pi, \dots$



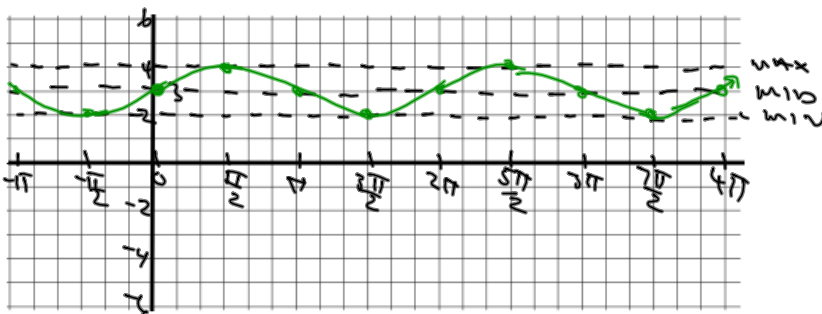
Example #1: Graph $f(\theta) = 4 \cos \theta$

Amplitude: 4 Period: 2π
 Vert. Shift: 0 Increment: $\frac{\pi}{2}$
 Horizontal Shift: 0 Key Values: 0 $\frac{\pi}{2}$ π $\frac{3\pi}{2}$ 2π ...



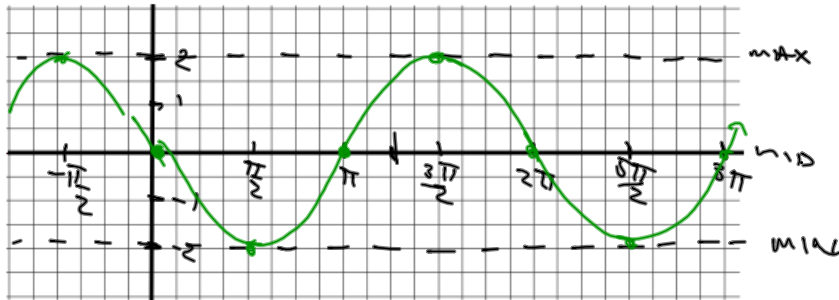
Example #2: Graph $f(\theta) = \sin \theta + 3$

Amplitude: 1 Period: 2π
 Vert. Shift: up 3 Increment: $\frac{\pi}{2}$
 Horizontal Shift: 0 Key Values: 0 $\frac{\pi}{2}$ π $\frac{3\pi}{2}$ 2π



Example #3: Graph $f(\theta) = -2\sin\theta$

Amplitude: -2 Period: 2π
 Vert. Shift: 0 Increment: $\pi/2$
 Horizontal Shift: 0 Key Values: 0 $\pi/2$ π $3\pi/2$ 2π



Example #4: Graph $f(\theta) = -3\cos\theta - 2$

Amplitude: -3 Period: 2π
 Vert. Shift: down 2 Increment: $\pi/2$
 Horizontal Shift: 0 Key Values: 0 $\pi/2$ π $3\pi/2$ 2π

