

2.04 Practice Problems: Graphing Sine & Cosine Functions with Amplitude & Period

For #1 & 2, state the amplitude and period of each function. Then graph at least two periods of the function.

1. $y = -3 \cos 6\theta$

Table/Chart:

Amplitude: _____

Period: _____

Graph:

2. $y = 5 \sin \frac{2\theta}{3}$

Table/Chart:

Amplitude: _____

Period: _____

Graph:

3. Write the equation of a cosine function with amplitude of $\frac{6}{11}$ and period of $\frac{7\pi}{4}$.

$$* \begin{cases} y = a \sin(b\theta) \\ y = a \cos(b\theta) \end{cases} \quad \left| \quad \text{period} = \frac{2\pi}{b} \quad \left| \quad \text{Interval} = \frac{P}{4} \text{ or } I = \frac{1}{4} \cdot P \right.$$

Key

2.04 Practice Problems: Graphing Sine & Cosine Functions with Amplitude & Period

For #1 & 2, state the amplitude and period of each function. Then graph at least two periods of the function.

1. $y = -3 \cos 6\theta$ $a = -3$
 $b = 6$

Amplitude: 3

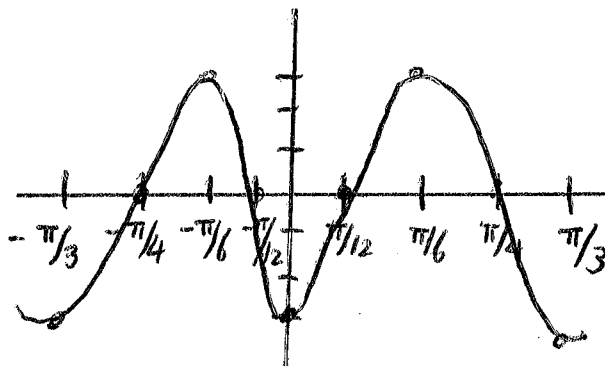
Period: $\frac{\pi}{3}$

period = $\frac{2\pi}{b} \rightarrow \frac{2\pi}{6} = \frac{\pi}{3}$

Graph: $I = \frac{1}{4}P \rightarrow I = \frac{1}{4} \cdot \frac{\pi}{3} = \frac{\pi}{12}$

Table/Chart:

θ	0	$\pi/12$	$\pi/6$	$\pi/4$	$\pi/3$
$\cos 6\theta$	1	0	-1	0	1
$-3 \cos 6\theta$	-3	0	3	0	-3



2. $y = 5 \sin \frac{2\theta}{3}$ $a = 5$
 $b = \frac{2}{3}$

Amplitude: 5

Period: 3π

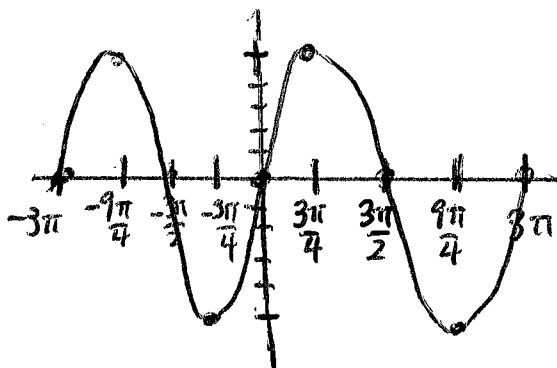
period = $\frac{2\pi}{b} = \frac{2\pi}{2/3} \rightarrow 2\pi \cdot \frac{3}{2} = 3\pi$

$I = \frac{P}{4} = \frac{3\pi}{4}$

Table/Chart:

θ	0	$\frac{3\pi}{4}$	$\frac{3\pi}{2}$	$\frac{9\pi}{4}$	3π
$\sin(\frac{2\theta}{3})$	0	1	0	-1	0
$5 \sin(\frac{2\theta}{3})$	0	5	0	-5	0

Graph:



3. Write the equation of a cosine function with amplitude of $\frac{6}{11}$ and period of $\frac{7\pi}{4}$.

$a = \pm \frac{6}{11}$

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

$\frac{7\pi}{4} = \frac{2\pi}{b}$

$7\pi b = 8\pi$

$b = \frac{8\pi}{7\pi}$

$b = 8/7$

$y = a \cos(b\theta)$

$y = \pm \frac{6}{11} \cos\left(\frac{8}{7}\theta\right)$