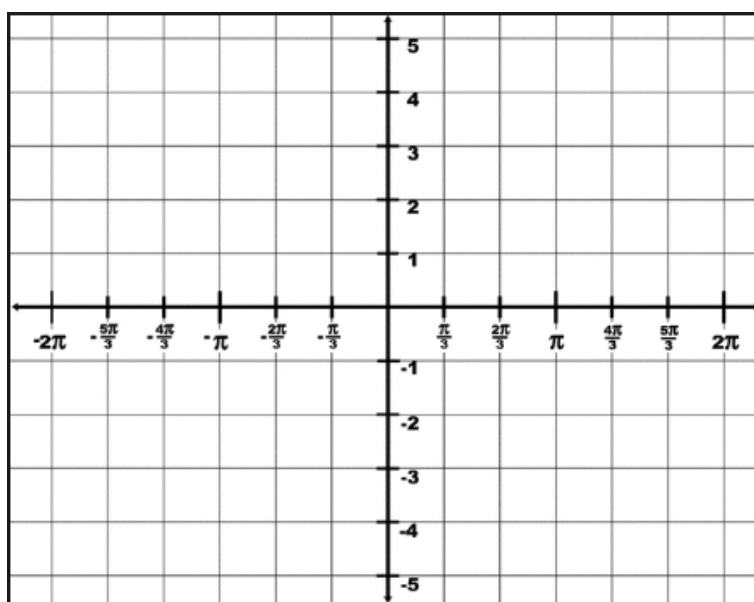


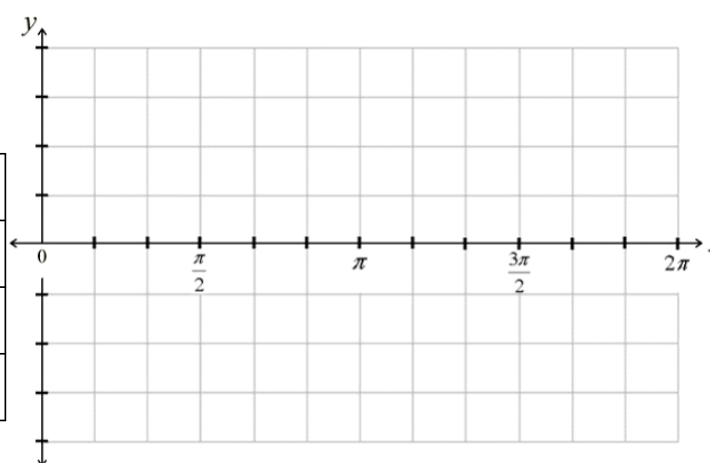
Warm Up: Sketch $y=\sin x$ and $y=\cos x$ on one graph over the interval $[-2\pi, 0]$.



Drawing Graphs & Writing Equations

$a \cdot f(x)$

x	0	$\frac{\pi}{2}$	π	$\frac{3\pi}{2}$	2π
sinx					
2sinx					
$\frac{1}{2}\text{sinx}$					



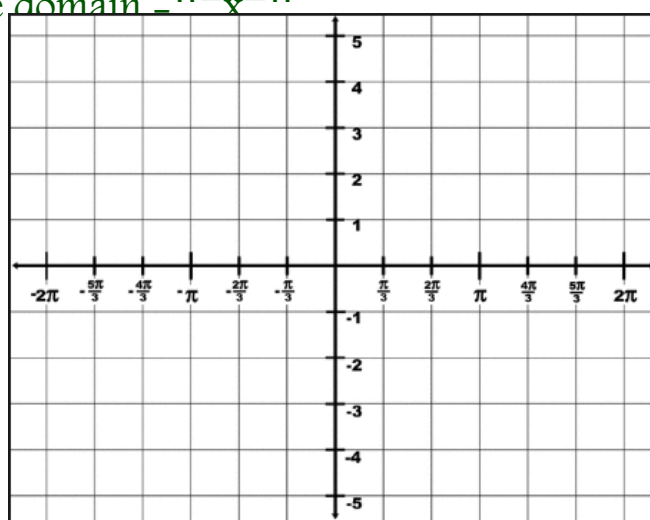
So let's summarize the differences

	$y = \sin x$	$y = 2\sin x$	$y = \frac{1}{2}\sin x$
Max			
Min			

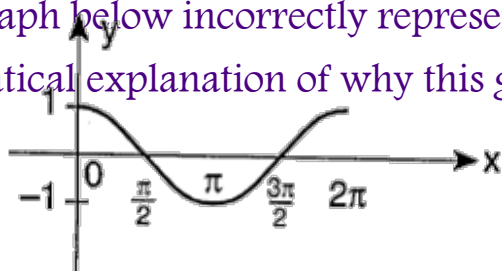
amplitude-

Examples:

1) Graph the equation $y=4\cos x$ in the domain $-\pi \leq x \leq \pi$

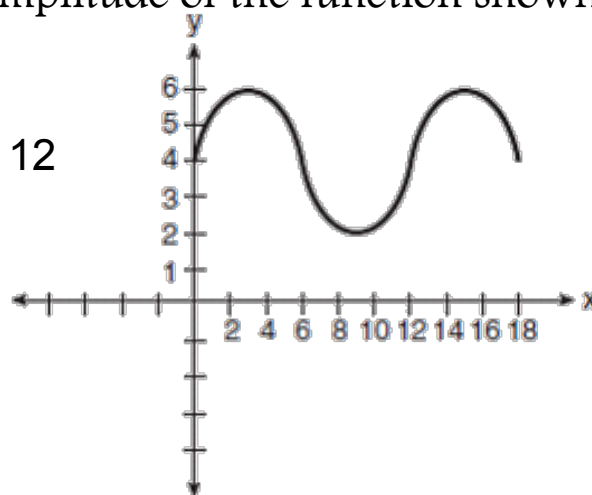


2. The graph below incorrectly represents the equations $y = 2\cos x$. Write a mathematical explanation of why this graph is incorrect.



Warm Up: What is the amplitude of the function shown in the accompanying graph?

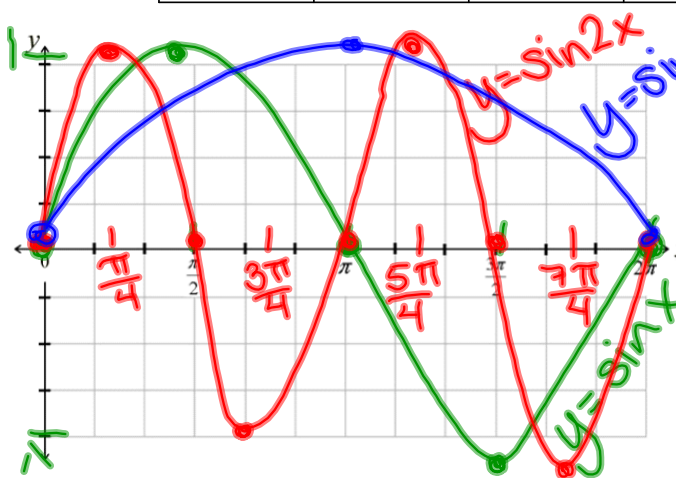
- a) 1.5 b) 2 c) 6 d) 12





dilation on x-axis

	ZERO	MAXIMUM	ZERO	MINIMUM	ZERO
$y = \sin x$	0	$\pi/2$	π	$3\pi/2$	2π
$y = \sin 2x$	0	$\pi/4$	$\pi/2$	$3\pi/4$	π
$y = \sin \frac{1}{2}x$	0	π	2π	3π	4π



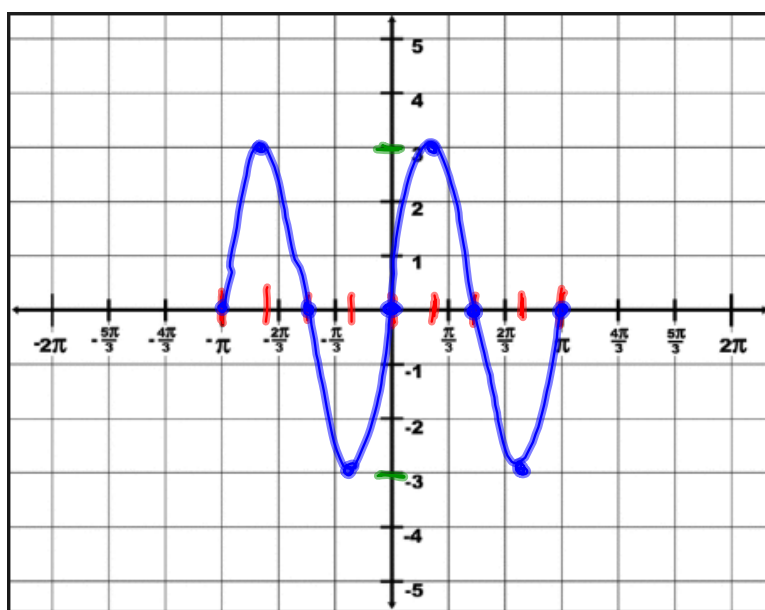
length of full cycle

	$y = \sin x$	$y = \sin 2x$	$y = \sin \frac{1}{2}x$
<u>PERIOD</u>	2π	π	4π
<u>FREQUENCY</u>	1	2	$\frac{1}{2}$

frequency - # of cycles between 0 and 2π (# in front of x)

Sketch the graph of $y=3\sin 2x$ in the interval $-\pi \leq x \leq \pi$.

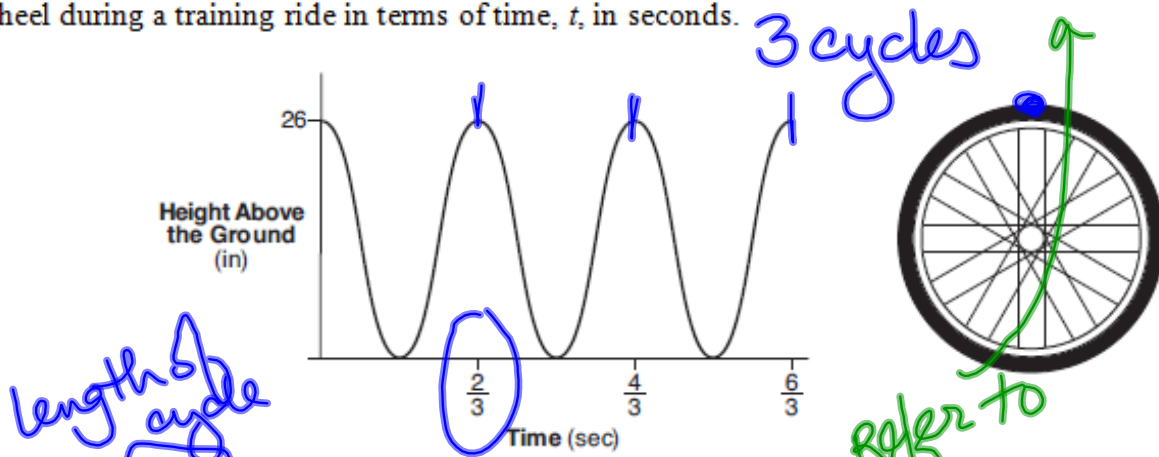
amp = 3
max: 3
min: -3



freq: 2
(2 cycles from 0 to 2π)

period: $\frac{2\pi}{\text{freq}}$
 $= \pi$

The graph below represents the height above the ground, h , in inches, of a point on a triathlete's bike wheel during a training ride in terms of time, t , in seconds.

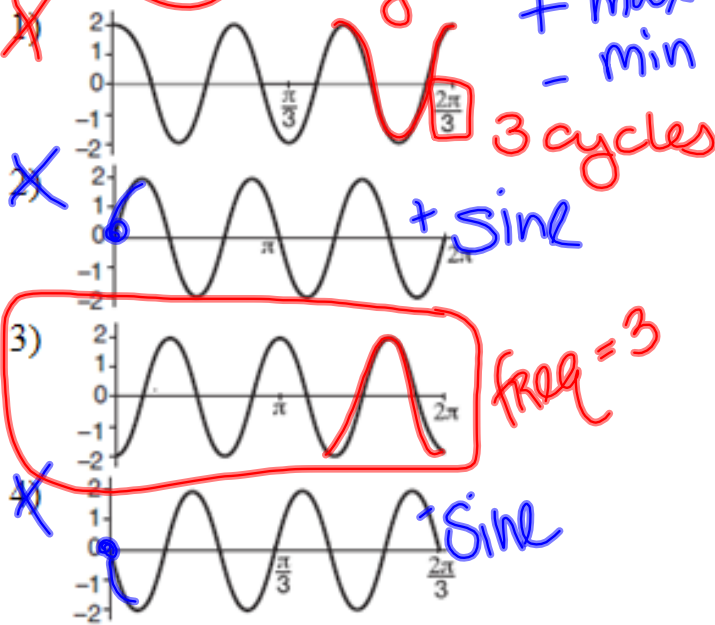


Identify the period of the graph and describe what the period represents in this context.

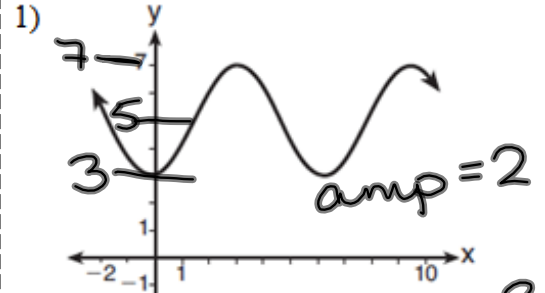
Period = $\frac{2}{3}$

Wheel makes full spin every $\frac{2}{3}$ sec.

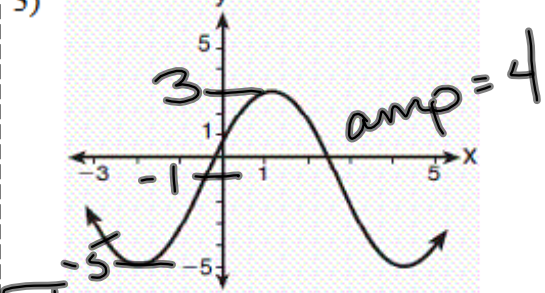
Which graph represents a cosine function with no horizontal shift, an amplitude of 2, and a period of $\frac{2\pi}{3}$?



Which sinusoid has the greatest amplitude?



2) $y = 3 \sin(\theta - 3) + 5$ amp = 3



4) $y = -5 \sin(\theta - 1) - 3$
amp = 5

SUMMARY:

- > *Amplitude* = $|a|$
- > *Frequency* = $|b|$
- > *Period* = $\frac{2\pi}{|b|}$

Homework:**p. 454 #29-35 odd**

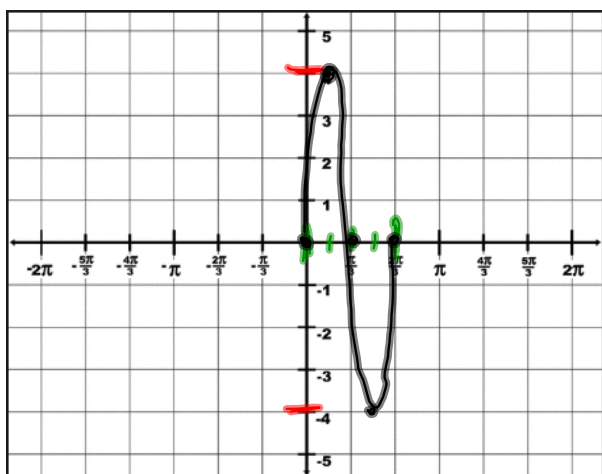
In 27-38. sketch one cycle of each function.

29. $y = \sin 2x$

31. $y = \cos 3x$

33. $y = 4 \sin 3x$

35. $y = -\sin 2x$



$(33) y = 4 \sin 3x$
 amp = 4
 freq = 3
 PER = $\frac{2\pi}{3}$

