Key

Name _____

Sin & Cos – Amplitude and Period of the graph #1

Given $y = a\sin[b(x - c)] + d$ or $y = a\cos[b(x - c)] + d$

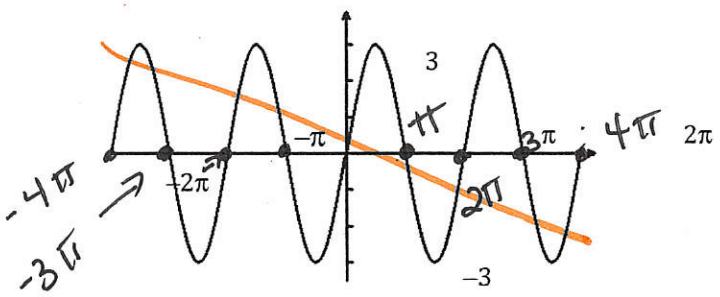
Amplitude = _____ Period = _____

Increment = _____

Cosine 'starts' at a _____ Sin 'starts' at _____

Give the amplitude and period of each function graphed below. Then write an equation of each graph.

1.



amplitude = 4 3

a = 4 3

period = 2π

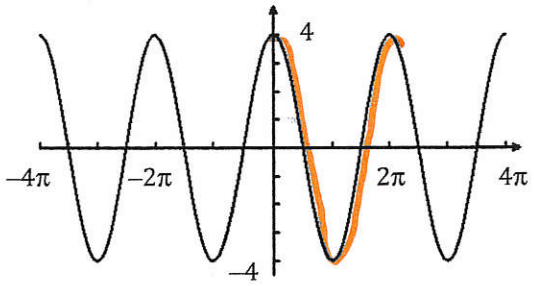
b = $2\pi = \frac{2\pi}{b}$ $b = 1$

Cos or sin? cos

Pos or neg ? pos

Equation: $y = 4\cos x$

2.



$y = 4\cos x$

Find the critical values. Sketch the graph of the function over the interval $-2\pi \le x \le 2\pi$.

3. $y = 4 \sin x$

a = 4 a = _____

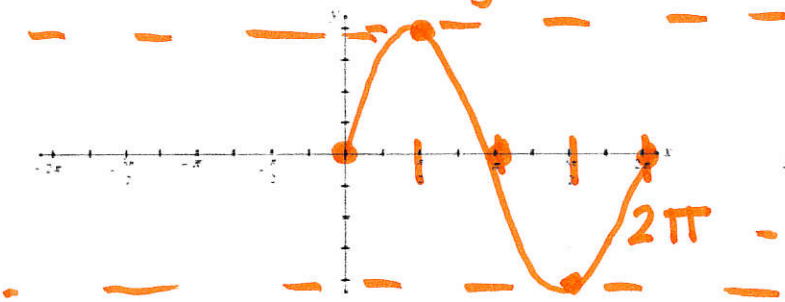
Sin starts at the midline

Period = 2π

Increment = $\frac{2\pi}{4} = \pi/2$

Positive sine goes up first.

Wherever you start, you have to finish !!!

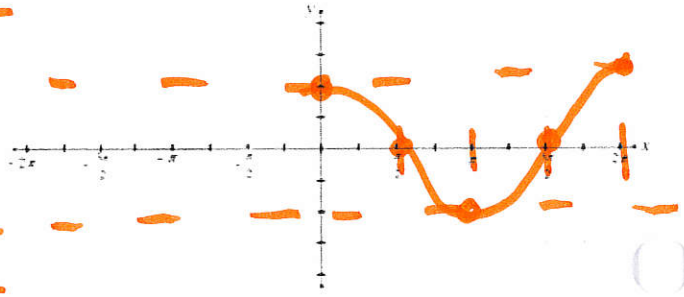


4. $y = 2 \cos x$

Positive Cosine starts the max

Period = 2π

Increment = $\pi/2$



5. $y = 2 \sin(2x)$

a = 2 a = mp = 2

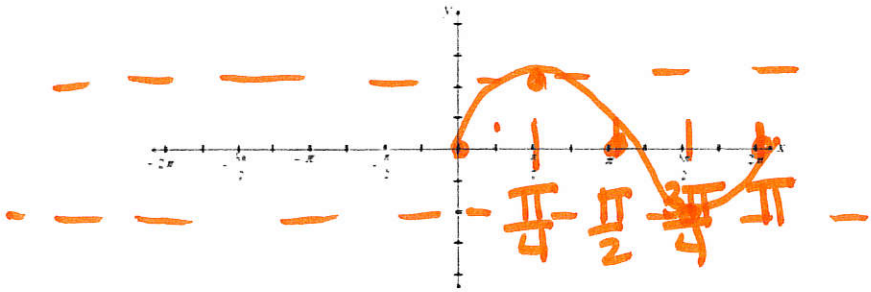
Sin starts at the midline

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

Increment = $\pi/4$

Positive sine goes up first.

Wherever you start, you have to finish !!!

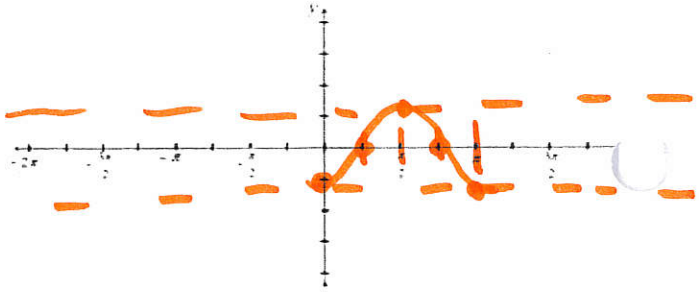


6. $y = -\cos(2x)$

Negative Cosine starts the min

Period = $2\pi/2 = \pi$

Increment = $\pi/4$



7. $y = 3\cos\left(\frac{1}{2}x\right)$

a = 3 amp = 3

b = $\frac{1}{2}$ b = _____

Pos Cos starts at the max

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

Increment = π

8. $y = -2\sin(4x)$

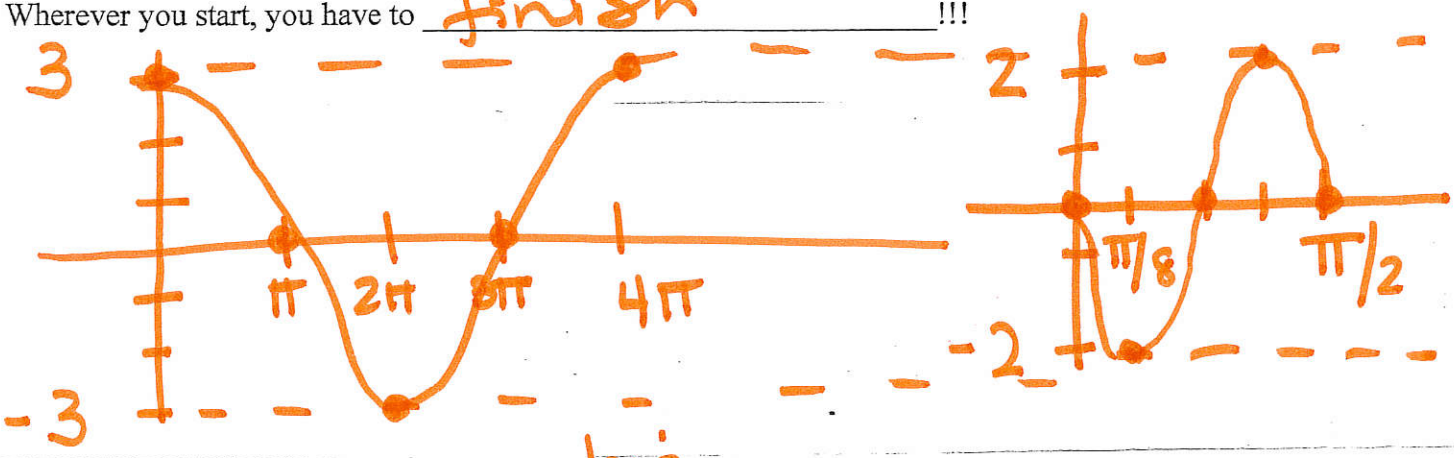
Sine starts at the midline

Period = $2\pi \div 4 = \pi/2$

Increment = $\pi/8$

Negative sine goes down first.

Wherever you start, you have to finish !!!



9. If 'a' is a large number, your wave will be big (small or big?)

10. If 'b' is a large number, the period of the graph will be shorter (longer or shorter). } fast

This means the graph will repeat more quickly.

11. If b is small ($0 < b < 1$), the period of the graph will be longer. (longer or shorter)
This means that it will take a longer time for the graph to repeat!

Slow rollers!

Pre-Calculus
1.5 Graphs of Sine and Cosine Functions
Assignment #44

Name_____

Period_____ Group #_____

Determine the amplitude and period of each function.

1. $y = \sin 4x$

Amplitude = 1 $b=4$

Period = $\frac{2\pi}{4} = \pi/2$ incr $= \pi/8$

2. $y = \cos 5x$

Amplitude = 1

Period = $\frac{2\pi}{5}$ incr. $\pi/10$

3. $y = \sin x$

Amplitude = 1

Period = 2π incr. $\pi/2$

4. $y = 4\cos x$

Amplitude = 4

Period = 2π incr. $\pi/2$

5. $y = -2\sin x$

Amplitude = 2

Period = 2π incr $= \pi/2$

6. $y = 2\sin(4x)$

Amplitude = 2

Period = $\frac{2\pi}{4} = \frac{\pi}{2}$ incr $\frac{\pi}{8}$

7. $y = 3\sin\left(\frac{2}{3}x\right)$

Amplitude = 3

Period = $2\pi \div \frac{2}{3} = 3\pi$ incr $= 3\pi/4$

8. $y = 4\cos(5x)$

Amplitude = 4

Period = $2\pi/5$ incr. $\pi/10$

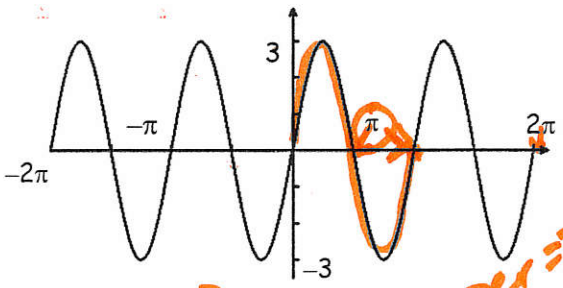
9. $y = 3\cos(2x)$

Amplitude = 3

Period = $2\pi/2 = \pi$ incr $= \pi/4$

Give the amplitude and period of each function graphed below. Then write an equation of each graph.

10.



Amplitude = 3

Period = π

Equation: $y = 3\sin(2x)$

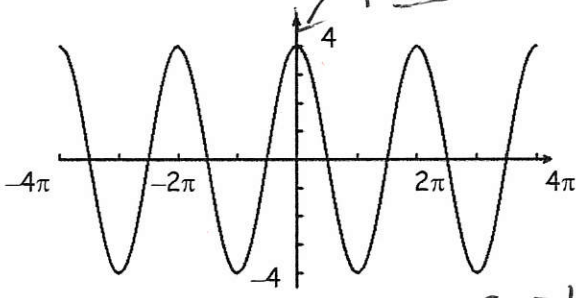
per $= \pi = \frac{2\pi}{b}$

$\pi b = 2\pi$

$b = 2$

11.

pos cos



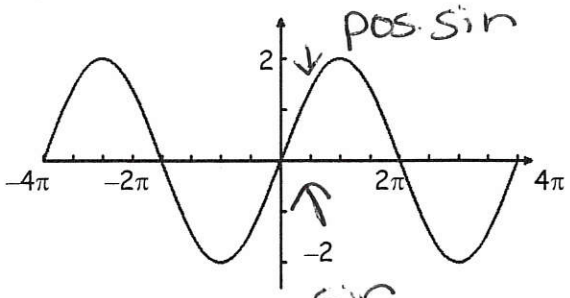
Amplitude = 4 $a = 4$

Period = $\frac{2\pi}{b} = \frac{2\pi}{b}$ $\therefore b = 1$

Equation:_____

12.

pos sin



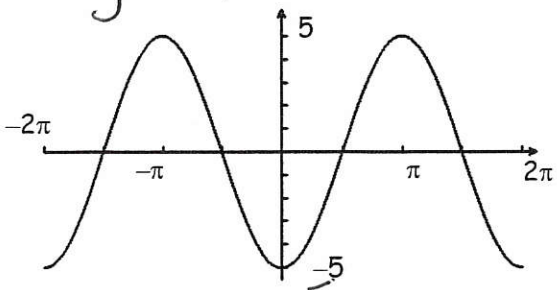
sin

Amplitude = 2 $\rightarrow a = 2$

Period = $4\pi = 2\pi/b$ $b = \frac{1}{2}$

Equation: $y = 2\sin\left(\frac{1}{2}x\right)$

13. $y = 4\cos x$



Amplitude = 5 neg cos

Period = $2\pi = b = 2\pi \div \frac{2\pi}{b}$ $b = 1$

Equation: $y = -5\cos x$