

Sine and Cosine Graphs Day 3

GOAL: Graph periodic functions with $a < 0$.
Write periodic equations given a periodic graph.

Apr 17-10:42 AM

Amplitude **Vertical Shift**

$y = a \sin bx + c$

Number of cycles between 0 and 2π

$b = \frac{2\pi}{\text{period}}$ $\text{Period} = \frac{2\pi}{|b|}$

Sine curve starts at the midline.

Cosine curve starts at the max or min.

Apr 22-1:52 PM

Review: $y = 2 \cos(3x)$

- min = -2
- max = 2
- y-int = (0, 2)
- cycles 3
- shift X
- period $\frac{2\pi}{3}$

Apr 17-10:50 AM

Let's look at more graphs where the "a" value is negative.

$y = -3 \sin 4x$

$a = 3$

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$y = -2 \cos 2x + 3$

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Write the equation for the periodic functions.

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

$y = 3 \sin 2x$

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

$2 + -2 = 0 \Rightarrow \frac{0}{2} = 0$

$y = -2 \cos 2x$

Apr 17-10:57 AM

Write the equation for the periodic functions.

shift: up 2
 min: 1
 max: 3
 y-intercept: (0,2)
 cycles: 2
 period: π

$y = \sin 2x + 2$

$2 \cdot 8 = 10 \frac{1}{2}$

shift: up 5
 min: 2
 max: 8
 y-intercept: (0,2)
 cycles: 1
 period: $\frac{\pi}{15}$

$y = 3 \cos x + 5$

Apr 17-10:59 AM

Write the equation for the periodic functions.

shift: x
 min: -3
 max: 3
 y-intercept: (0,0)
 cycles: $\frac{1}{2}$
 period: 4π

$y = -3 \sin \frac{1}{2}x$

shift: up 1
 min: 0
 max: 2
 y-intercept: (0,1)
 cycles: $\frac{1}{2}$
 period: 4π

$y = \sin \frac{1}{2}x + 1$

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Assignment: Periodic Functions Worksheet Day 3

ON the back put what a=
 b=
 c=

Apr 17-11:04 AM