

Quiz tomorrow on Days 1 - 4
Do the warm-up at the start of today's Day 4 notes.

HOMEWORK 8-3

1. a
 2. c
 3. a
 4. c
- 5 & 6. see graphs in the following slides

Feb 6-6:40 PM

Name: Key
 Period: _____

Algebra 2 Homework 11-3

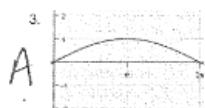
Choose the best answer.

1. The graph of which equation has amplitude 2 and period π ?
 a. $f(x) = 2\cos(2x)$
 b. $f(x) = \frac{1}{2}\sin(2x)$

$$\begin{aligned} |A| &= 2 \\ \text{Per} &= \frac{\pi}{1} = \frac{2\pi}{|w|} \\ 2\pi &= \pi/w \\ 2 &= |w| \end{aligned}$$

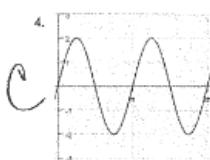
2. The graph of which equation has amplitude of 1 and period π ?
 a. $f(x) = \tan(x)$
 b. $f(x) = \sin\left(\frac{1}{2}x\right)$

$$\begin{aligned} \text{Per} &= \frac{\pi}{1} = \frac{2\pi}{|w|} \\ \pi/|w| &= 2\pi \\ |w| &= 2 \end{aligned}$$



- Which is the equation of this graph?
 a. $f(x) = \sin\left(\frac{1}{2}x\right)$
 b. $f(x) = \sin(2x)$

$\frac{1}{2}$ cycle in 2π
 $|w|$ goes through $(0, 0)$
 so... sine fcn.



- Which is the equation of this graph?
 a. $f(x) = 2\sin\left(\frac{1}{2}x\right)$
 b. $f(x) = \frac{1}{2}\cos(2x)$

sine fcn
 amp = 2
 2 cycles in 2π
 $|w|$

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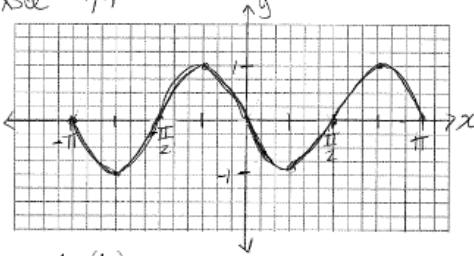
$$y = -\sin(2x) \quad -\pi \text{ to } \pi$$

5. Graph $f(x) = -\sin(2x)$ for $-\pi \leq x \leq \pi$. Show all work as done in class.

Amp = $|-1| = 1$
 Range = $[-1, 1]$
 Freq = $\frac{1}{2}\pi$ (2 cycles in 2π)
 Per = $\frac{2\pi}{2} = \pi$ (length of 1 cycle)
 Xsel = $\pi/4$

pattern: $-1(0, 1, 0, -1, 0)$
 $(0, -1, 0, 1, 0)$

$$\begin{array}{c|c|c|c|c|c} x & 0 & \frac{\pi}{4} & \frac{\pi}{2} & \frac{3\pi}{4} & \pi \\ \hline y & 0 & -1 & 0 & 1 & 0 \end{array}$$



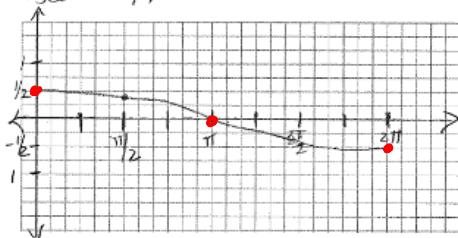
$$y = \frac{1}{2} \cos(\frac{1}{2}x) \quad 0 \text{ to } 2\pi$$

6. Graph $f(x) = \frac{1}{2} \cos\left(\frac{1}{2}x\right)$ for $0 \leq x \leq 2\pi$. Show all work as done in class.

Amp = $\frac{1}{2}|\frac{1}{2}| = \frac{1}{2}$
 Range = $[-\frac{1}{2}, \frac{1}{2}]$
 Freq = $\frac{1}{2}/2\pi = \frac{1}{4}\pi$ cycle in 2π
 Per = $2\pi/\frac{1}{2} = 4\pi$
 Xsel = $4\pi/4 = \pi$

Pattern = $\frac{1}{2}(1, 0, -1, 0, 1) = (\frac{1}{2}, 0, \frac{1}{2}, 0, \frac{1}{2})$

$$\begin{array}{c|c|c|c|c|c} x & 0 & \pi & 2\pi & 3\pi & 4\pi \\ \hline y & \frac{1}{2} & 0 & -\frac{1}{2} & 0 & \frac{1}{2} \end{array}$$



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Day 4: Graphing with changes in amplitude, frequency and period

Nov 10-8:36 PM

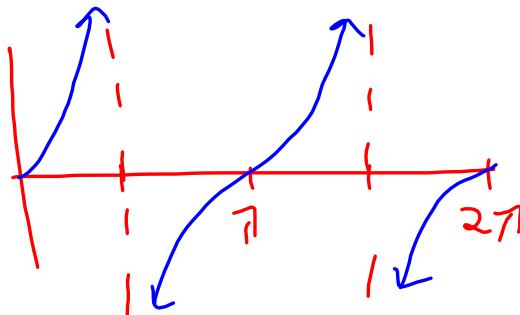
Warm-Up:

Regents Question:

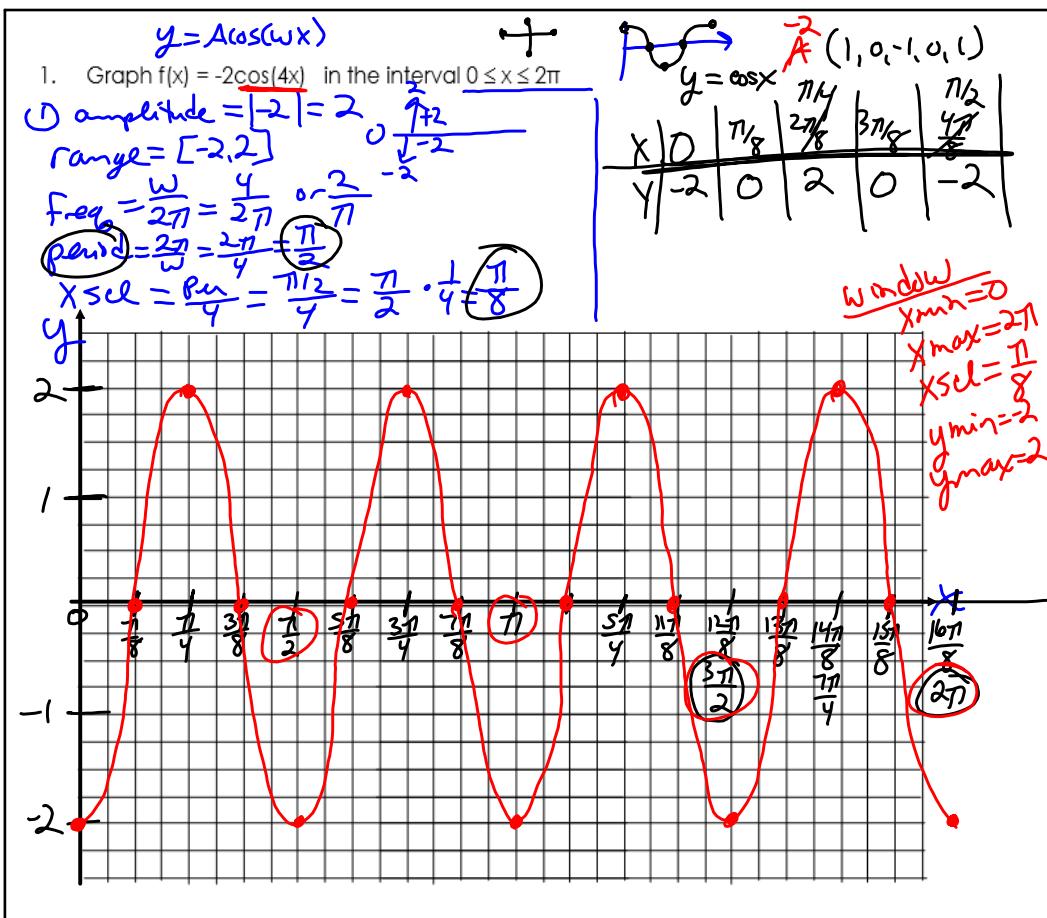
As x increases from 0 to $\pi/2$, the graph of the equation $y = \tan x$ will

- (1) increase from 0 to 2
 (2) decrease from 0 to -2

- (3) increase without limit
 (4) decrease without limit

 $x: 0 \rightarrow 2\pi$
 $y: -\infty \rightarrow \infty$


Jan 14-8:29 PM



Nov 10-8:37 PM

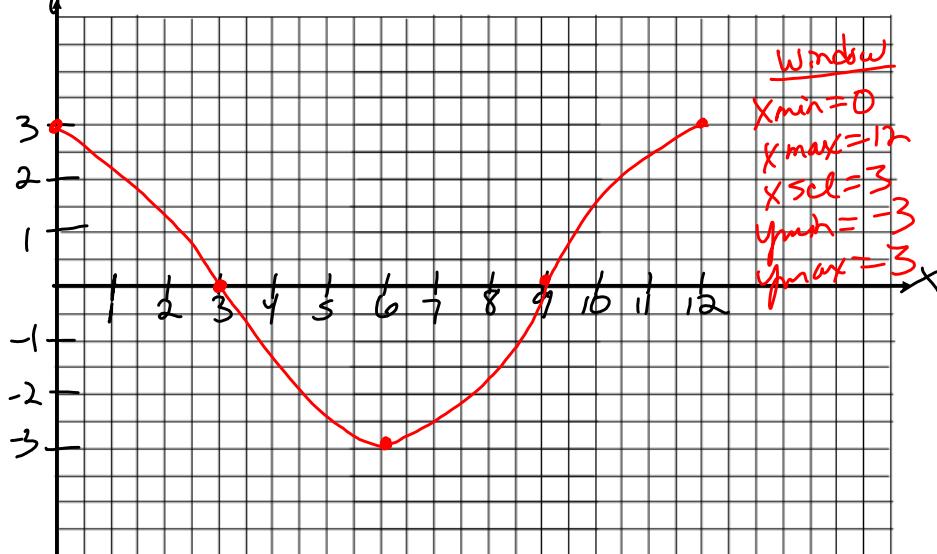
2. Graph one complete cycle of the function $f(x) = 3 \cos(\pi/6x)$.

$$\begin{aligned} \text{amp} &= |3| = 3 \\ \text{range} &= [-3, 3] \\ \text{freq} &= \frac{\omega}{2\pi} = \frac{\pi/6}{2\pi} = \frac{\pi}{12} \\ \text{per} &= \frac{2\pi}{\omega} = \frac{2\pi}{\pi/6} = 2\pi \cdot \frac{6}{\pi} = 12 \\ x\text{scl} &= \frac{\text{per}}{4} = \frac{12}{4} = 3 \end{aligned}$$

$$y = A \cos(\omega x)$$

$[0, -]$

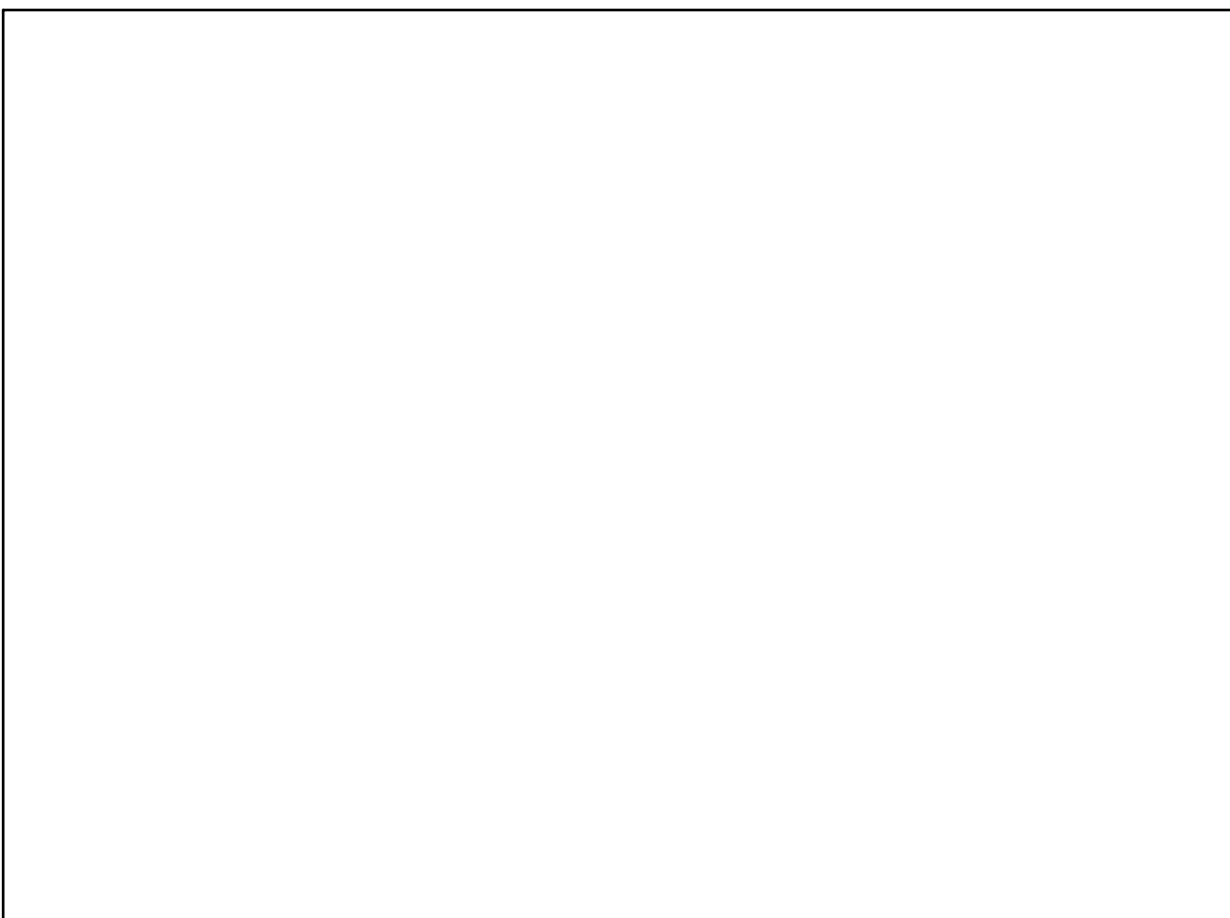
$$\begin{array}{c} y = \cos x \\ 3(1, 0, -1, 0, 1) = 3, 0, -3, 0, 3 \\ \hline x | 0 | 3 | 6 | 9 | 12 \\ y | 3 | 0 | -3 | 0 | 3 \end{array}$$



Window

$$\begin{aligned} x_{\min} &= 0 \\ x_{\max} &= 12 \\ x\text{scl} &= 3 \\ y_{\min} &= -3 \\ y_{\max} &= 3 \end{aligned}$$

Nov 10-8:37 PM



Nov 10-8:31 PM