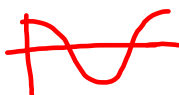


HOMEWORK 8-2

sine curve:



cosine curve:



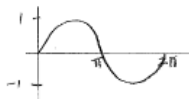
- | | | |
|------|---|------------------|
| 1. d | 8. b | 15. b |
| 2. b | 9. b | 16. d |
| 3. a | 10. c | 17. 3 |
| 4. c | 11. d | 18. c |
| 5. c | 12. b | 19. b |
| 6. d | 13. c | 20. a |
| 7. d | 14. $\frac{2}{2\pi}$ or $\frac{1}{\pi}$ | |

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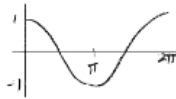
 Name: Key
 Period: _____

Algebra 2 Homework 11-2

Sketch the sine curve

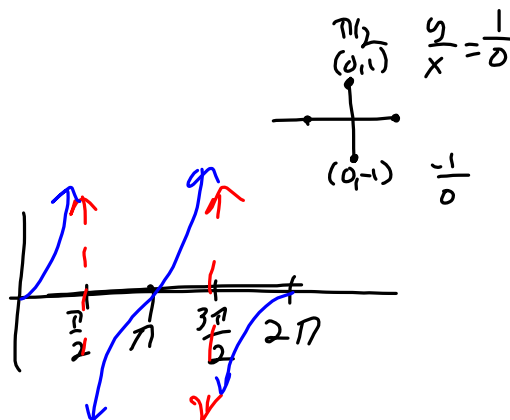


Sketch the cosine curve



Select the best answer. Show work when possible.

- As angle x increased from $\frac{\pi}{2}$ to π , the value of $\sin(x)$
 - increases from -1 to 0
 - increases from 0 to 1
 - decreases from 0 to -1
 - decreases from 1 to 0
- As angle x increased from π to $\frac{3\pi}{2}$, the value of $\cos(x)$ will
 - increase from 0 to 1
 - increase from -1 to 0
 - decreases from 0 to -1
 - decreases from 1 to 0
- As angle θ increases from 0 to π , the value of $\cos(\theta)$
 - decreases only
 - increases only
 - decreases, then increases
 - increases, then decreases
- As θ increased from $\frac{\pi}{2}$ to $\frac{3\pi}{2}$, the value of $\cos(\theta)$
 - decreases only
 - increases only
 - decreases, then increases
 - increases, then decreases
- As θ increases from π to $\frac{3\pi}{2}$, which of the following is true?
 - $\sin(\theta)$ decreases from 1 to 0
 - $\cos(\theta)$ decreases from 0 to -1
 - $\cos(\theta)$ increases from -1 to 0
 - $\sin(\theta)$ increases from -1 to 0
- Which is not an element of the domain of $f(x) = \tan(x)$?
 - π
 - 2π
 - 0
 - $\frac{\pi}{2}$
- Which value is not in the domain of the function $f(x) = 2\tan(x)$?
 - π
 - $\frac{\pi}{3}$
 - $\frac{2\pi}{3}$
 - $\frac{\pi}{2}$
- Which is not an element in the range of the function $f(x) = \cos(x)$?
 - 1
 - 2
 - $\frac{1}{2}$
 - $-\frac{1}{2}$



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9. Which is not an element in the range of the function $f(x) = \sin(x)$?

B a. 1 b. 2 c. 0 d. $\frac{1}{2}$

10. The amplitude of $f(x) = 3\sin(2x)$ is

C a. π b. 2 c. 3 d. 4π

11. What is the range of the function $f(x) = 3\sin(x)$?

D a. $y \geq 0$ b. $-1 \leq y \leq 1$ c. $y \leq 3$ d. $-3 \leq y \leq 3$

12. The maximum value of $f(x) = 2\sin(3x)$ is

B a. 1 b. 2 c. 3 d. π

13. What is the minimum value of $f(x)$ in the equation $f(x) = 3\sin(4x)$?

C a. -1 b. -2 c. -3 d. -4

14. What is the frequency of the graph $f(x) = \cos\left(\frac{2}{3}x\right)$?

$\frac{2}{2\pi}$ $\frac{2\pi}{4} = \frac{\pi}{2}$ $\rightarrow \text{freq} = \frac{w}{2\pi} = \frac{2}{2\pi}$ or $\frac{1}{\pi}$

15. What is the period of the graph whose equation is $y = 2\sin(4x)$?

B a. $\frac{4\pi}{3}$ b. $\frac{\pi}{2}$ c. 4 d. 3 $\frac{2\pi}{4} = \frac{\pi}{2}$

16. What is the period of $y = 3\sin\left(\frac{1}{2}x\right)$?

D a. π b. 2π c. 3π d. 4π $\frac{2\pi}{1/2} = 2\pi(2) = 4\pi$

17. How many cycles of the graph of $y = 4\sin(3x)$ appear in 2π radians?

3 $\frac{2\pi}{|w|} = \frac{2\pi}{3}$

18. (*) The Ferris wheel at the landmark Navy Pier in Chicago takes 7 minutes to make one full rotation. The height, H , in feet, above the ground on one of the six person cars can be modeled by $H(t) = 70\sin\left(\frac{2\pi}{7}(t-1.75)\right) + 80$, where t is time, in minutes. Using $H(t)$ for one full rotation, this car's minimum height, in feet, is

C a. 150 b. 70 c. 10 d. 0 $-70 + 80 = 10$

19. (*) A sine function increasing through the origin can be used to model light waves. Violet light has a wavelength of 400 nanometers. Over which interval is the height of the wave decreasing only?

B a. $[0, 200]$ b. $[100, 300]$ c. $(200, 400)$ d. $(300, 400)$

20. (*) Which equation represents an odd function?

A a. $y = \sin(x)$ b. $y = \cos(x)$ c. $y = (x+1)^2$ d. $y = e^{2x}$

(*) = Regents question

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Day 3: Graphing with changes in amplitude, frequency and period

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Try to write the formulas for $y = A\cos(wx)$:

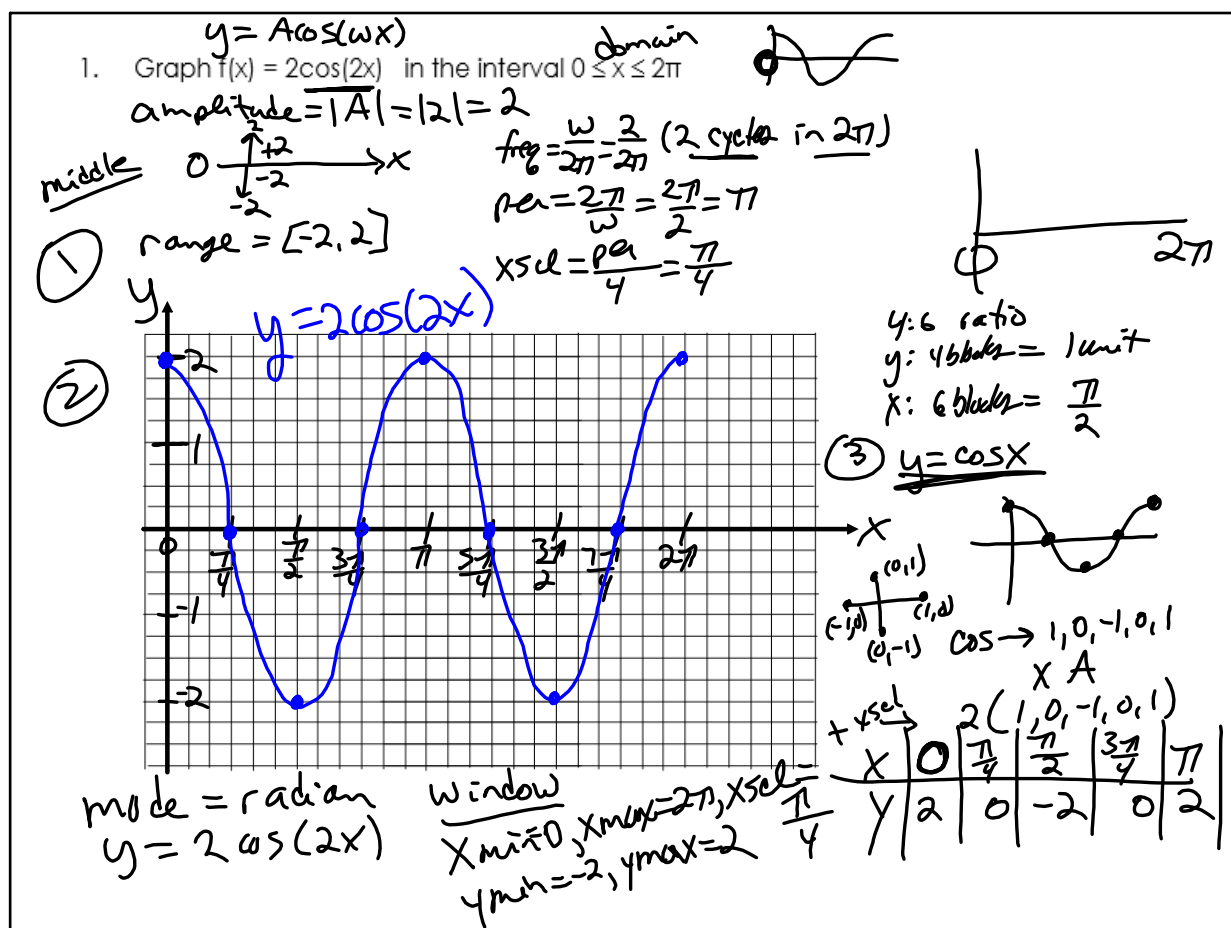
Amplitude = $|A|$

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

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

xsc1 = $\frac{\text{per}}{4}$

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2. Graph $f(x) = -2 \sin(\frac{1}{2}x)$ in the interval $[-\pi \leq x \leq \pi]$

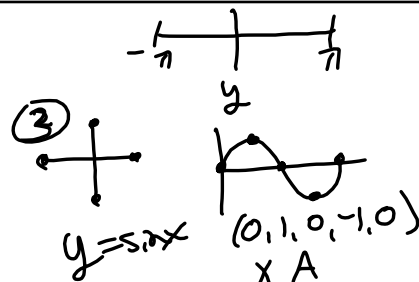
① Amplitude = $|A| = |-2| = 2$

range: $[-2, 2]$

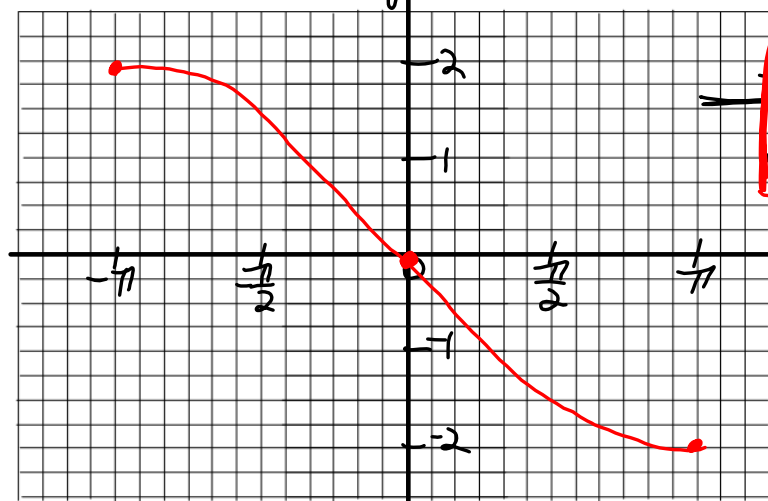
frequency = $\frac{1}{2\pi} = \frac{1}{2} \cdot \frac{1}{2\pi} = \frac{1}{4\pi}$

period = $\frac{2\pi}{\frac{1}{2}} = 4\pi$

$|X_{sc}| = \frac{4\pi}{4} = \frac{4\pi}{4} = \pi$ (interval to plot)



②



$-2(0, 1, 0, -1, 0)$

π	x	0	π	2π	3π	4π
2	y	0	-2	0	2	0

Window

$x_{min} = -\pi$

$x_{max} = \pi$

$x_{sc} = \pi$

$y_{min} = -2$

$y_{max} = 2$

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