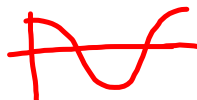


HOMEWORK 8-2

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

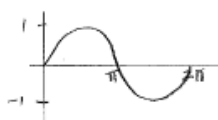
7. d

14. $\frac{2}{2\pi}$ or $\frac{1}{\pi}$

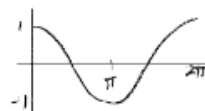
Name: Kay
 Period: _____

Algebra 2 Homework 11-2

Sketch the sine curve



Sketch the cosine curve



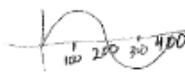
Select the best answer. Show work when possible.

- 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
 - $\frac{1}{2}$
 - $-\frac{1}{2}$

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 $f(\theta) = 2\sin(3\theta)$ is
- B a. 1 b. 2 c. 3 d. π
13. What is the minimum value of $f(\theta)$ in the equation $f(\theta) = 3\sin(4\theta)$?
- C a. -1 b. -2 c. -3 d. -4
14. What is the frequency of the graph $f(x) = \cos(2x)$?
- $2/2\pi$ 2 cycles in 2π
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 $\frac{2\pi}{\pi} = 2$
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. 0 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. $y = (x+1)^3$ d. $y = e^{2x}$

(*) = Regents question

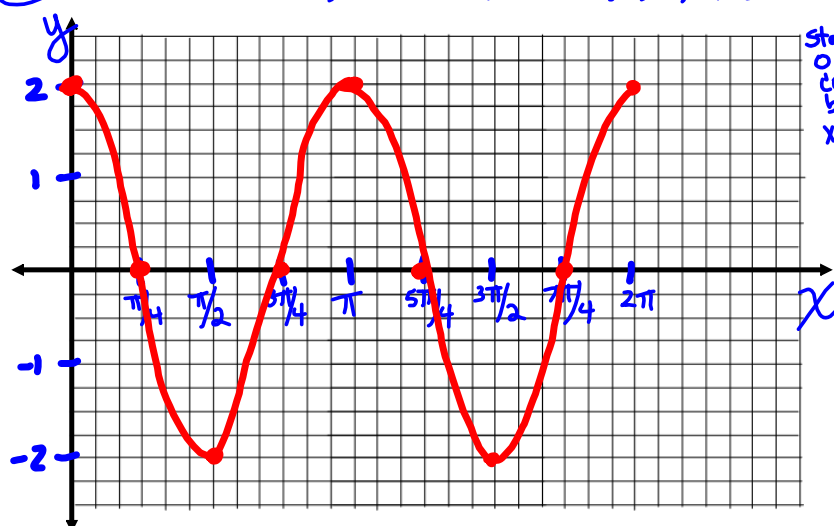
$$H(t) = 70 \sin(\text{mm}) + 80$$



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

1. Graph $f(x) = 2\cos(2x)$ in the interval $0 \leq x \leq 2\pi$

- ① $\text{amp} = |A| = |2| = 2$ $[-2, 2]$
- ② $\text{frequency} = \frac{\omega}{2\pi} = 2 \text{ cycles in } 2\pi \text{ or } 2/2\pi$
- ③ $\text{Per} = \frac{2\pi}{\omega} = \frac{2\pi}{2} = \pi = \text{length of 1 cycle}$
- ④ $X_{\text{interval}} = \frac{\text{Per}}{4} = \frac{\pi}{4}$
- ⑤ $\text{Pattern} = A(1, 0, -1, 0, 1) = 2(1, 0, -1, 0, 1) = (2, 0, -2, 0, 2)$



Start at 0 and count by X_{interval}

x	0	$\pi/4$	$\pi/2$	$3\pi/4$	π
y	2	0	-2	0	2

2. Graph $f(x) = -2 \sin(1/2 x)$ in the interval $-\pi \leq x \leq \pi$

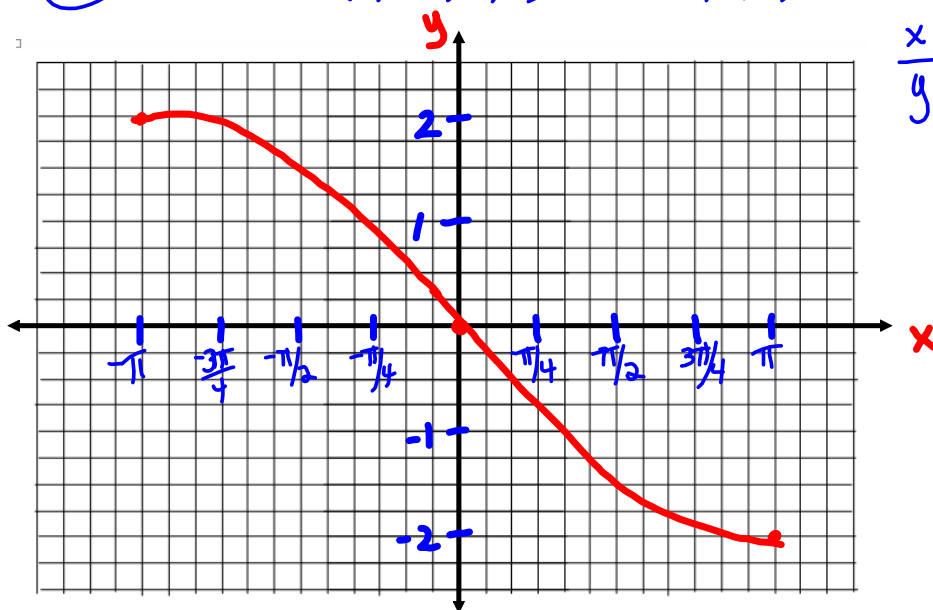
① amp = $|-2| = 2$ $[-2, 2]$

② freq = $w/2\pi = 1/2$ cycle in 2π

③ Period = $2\pi/w = 2\pi/1/2 = 2\pi \cdot 2 = 4\pi = \text{length of 1 cycle}$

④ Xinterval = $\frac{\text{Per}}{4} = \frac{4\pi}{4} = \pi$

⑤ Pattern = $A(0, 1, 0, -1, 0) = -2(0, 1, 0, -1, 0) = 0, -2, 0, 2, 0$



x	0	π	2π	3π	4π
y	0	-2	0	2	0

