

Chapter 4

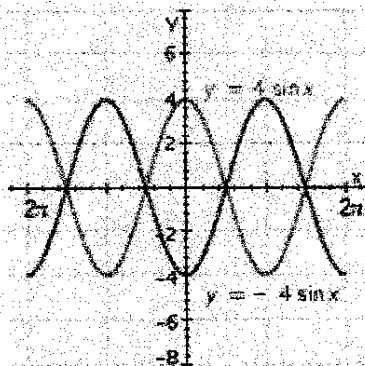
Multiple Choice

Identify the choice that best completes the statement or answers the question.

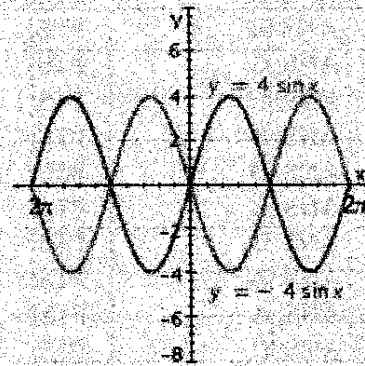
1. Use your graphing calculator to graph the pair of functions for $-2\pi \leq x \leq 2\pi$ together on a single coordinate system. (Make sure your calculator is set to radian mode.)

$$y = 4 \sin x, -4 \sin x$$

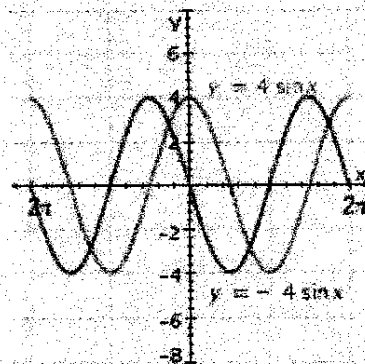
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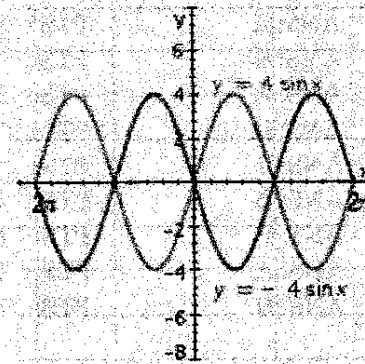
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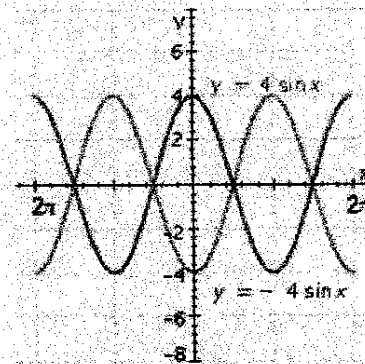
b.



e.

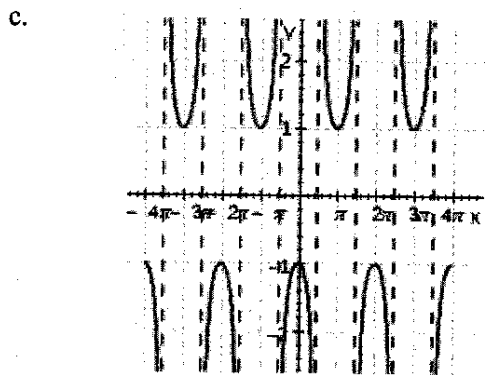
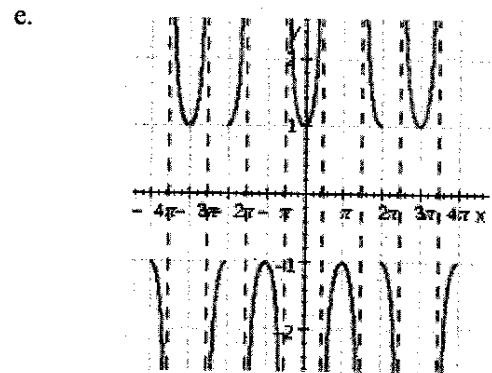
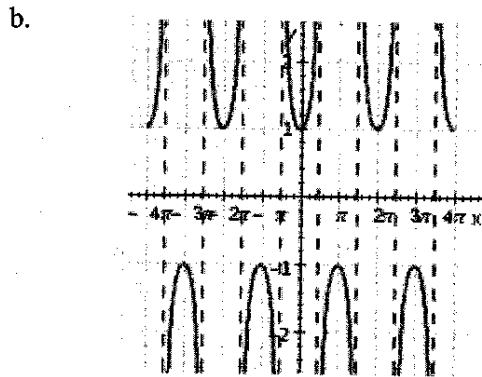
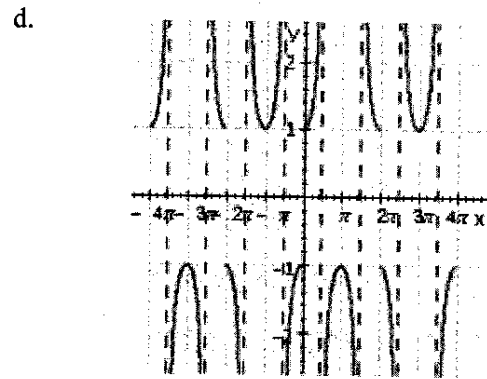
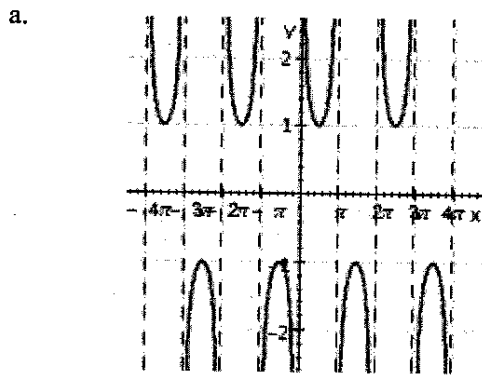
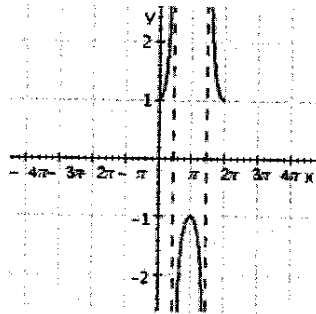


c.





2. Sketch the graph of $y = \sec x$ between $x = -4\pi$ and $x = 4\pi$ by extending the graph for x between 0 and 2π .



3. Find the algebraic expression that is equal to $\sin(-\theta) \sec(-\theta) \cot(-\theta)$.

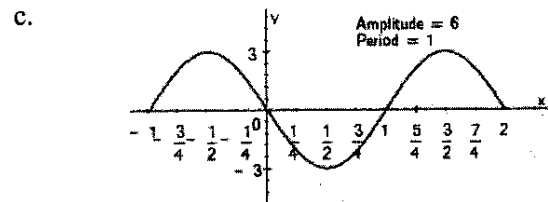
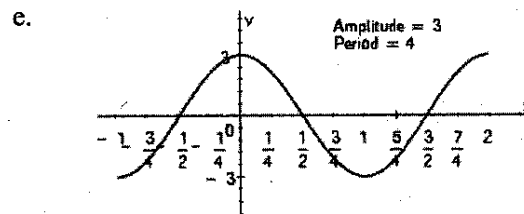
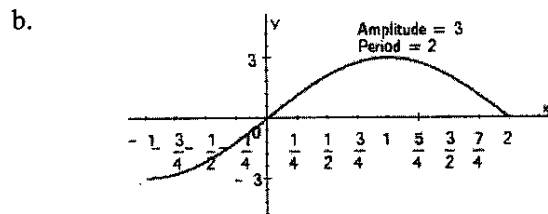
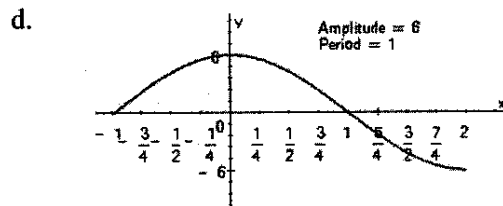
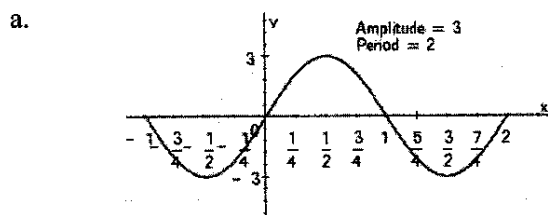
- a. 1
- b. $\sec(-\theta)$
- c. $\csc(-\theta)$
- d. $\cos(-\theta)$
- e. $\sin(-\theta)$

4. Find the algebraic expression that is equal to $\sec \theta - \cos(-\theta)$.

- a. $\frac{1}{\cos \theta}$
- b. $\frac{\cos^2 \theta}{\sin \theta}$
- c. $\frac{1}{\sin \theta}$
- d. $\tan^2 \theta$
- e. $\frac{\sin^2 \theta}{\cos \theta}$

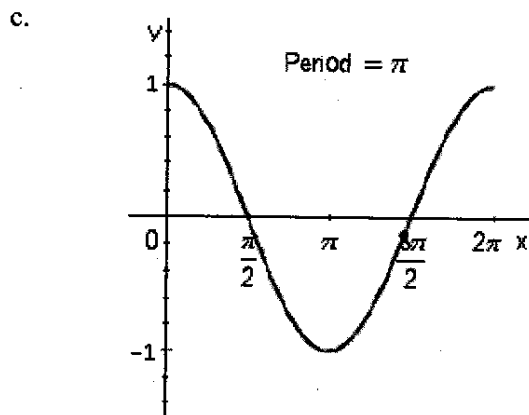
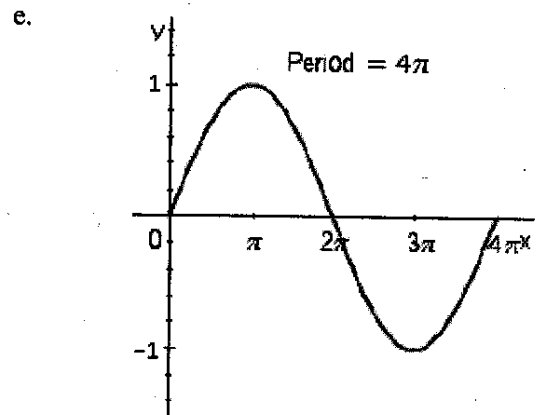
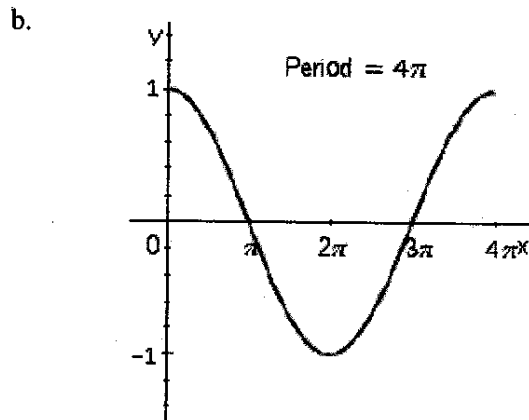
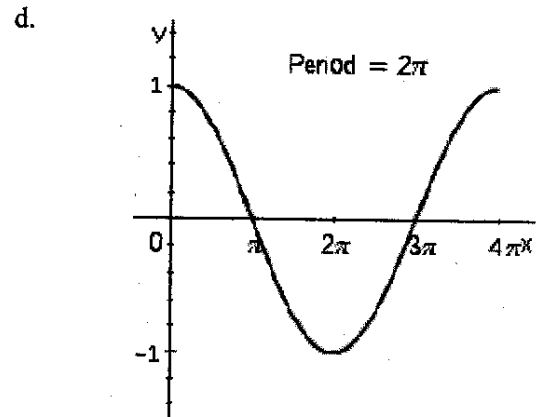
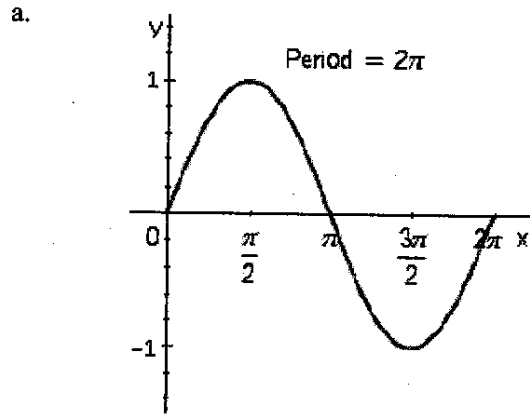
5. Identify the graph of the function

$$y = 3 \sin \pi x, -1 \leq x \leq 2$$



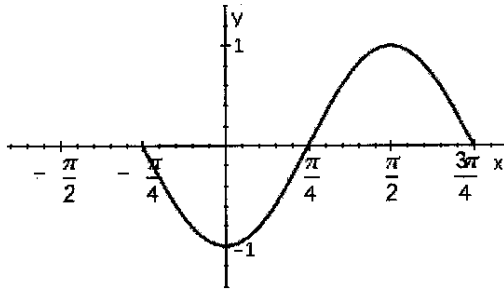
6. Identify the graph of the function

$$y = \cos \frac{1}{2} x$$

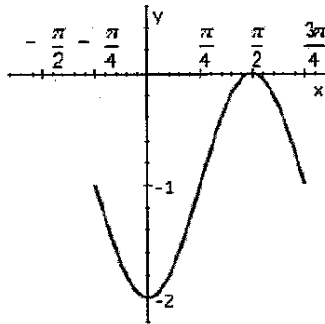


7. Use the graph of the equation $y = -\sin\left(2x + \frac{\pi}{2}\right)$ shown below to identify the graph of one complete cycle of the equation $y = 3 - \sin\left(2x + \frac{\pi}{2}\right)$.

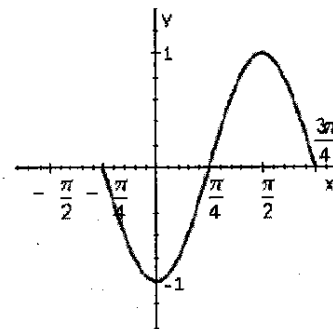
$$y = -\sin\left(2x + \frac{\pi}{2}\right)$$



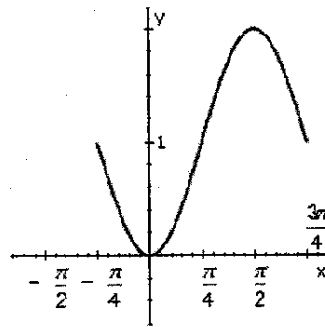
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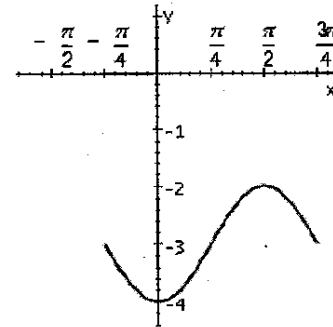
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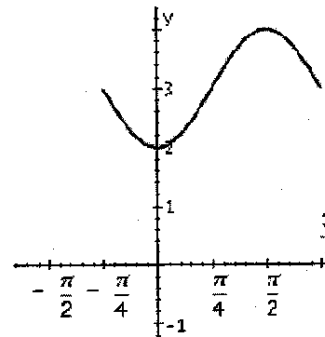
b.



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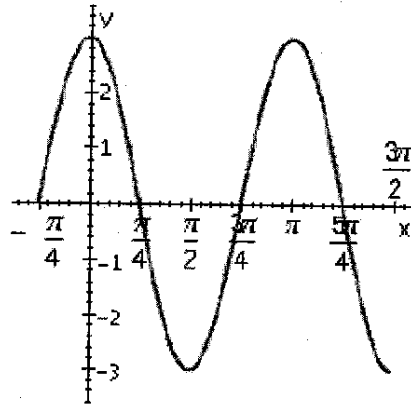
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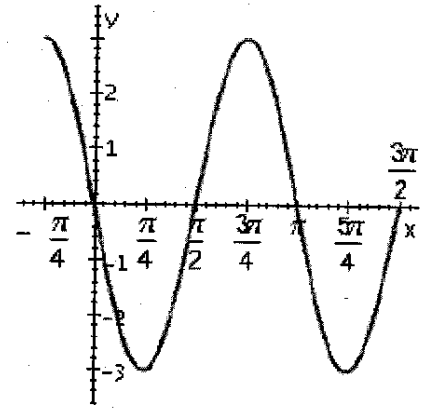
8. Identify the graph of the equation over the given interval.

$$y = 3 \sin \left(2x - \frac{\pi}{2} \right), -\frac{\pi}{4} \leq x \leq \frac{3\pi}{2}$$

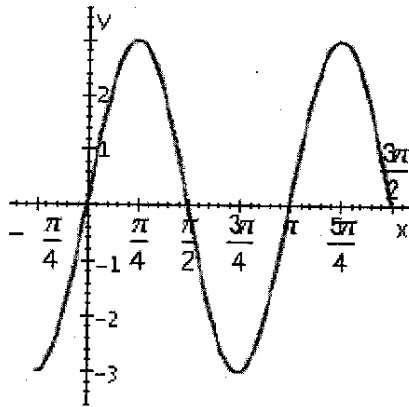
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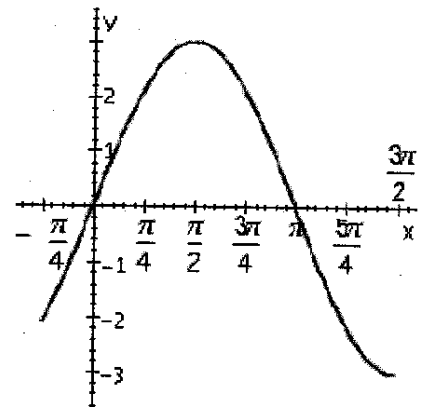
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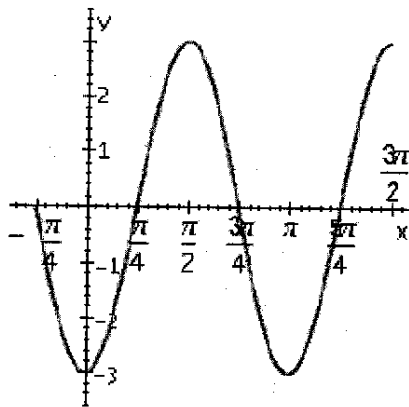
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9. Identify the amplitude and phase shift for the equation.

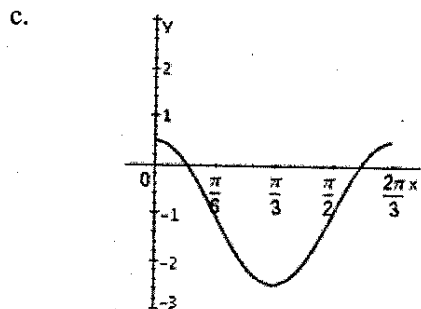
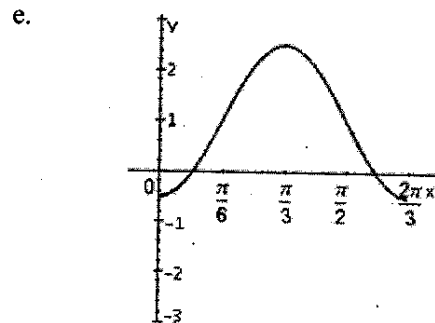
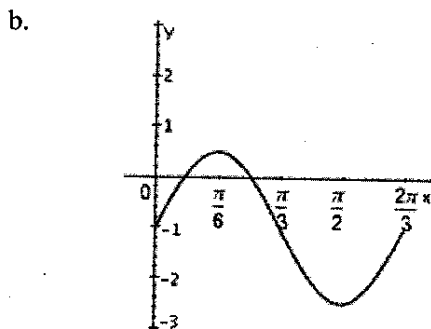
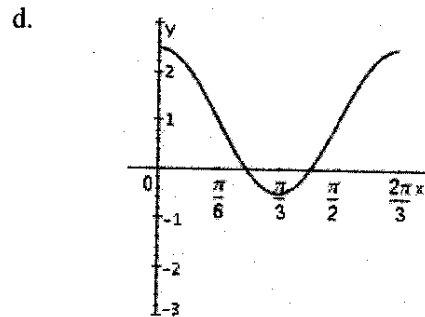
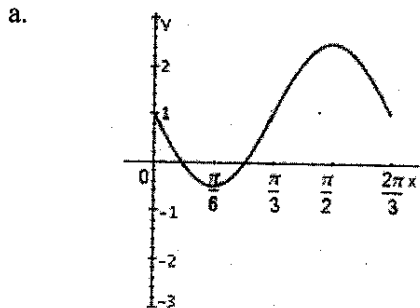
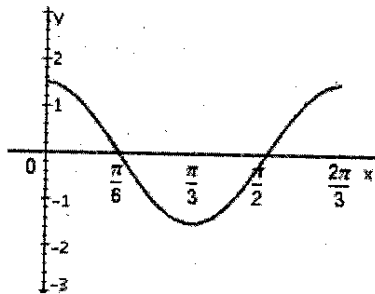
$$y = 4 \cos\left(2x + \frac{\pi}{2}\right)$$

- a. Amplitude = 4
Phase shift = $\frac{\pi}{4}$
- b. Amplitude = 1
Phase shift = $\frac{\pi}{4}$
- c. Amplitude = 5
Phase shift = $\frac{\pi}{2}$
- d. Amplitude = 4
Phase shift = $-\frac{\pi}{4}$
- e. Amplitude = 1
Phase shift = $-\frac{\pi}{4}$

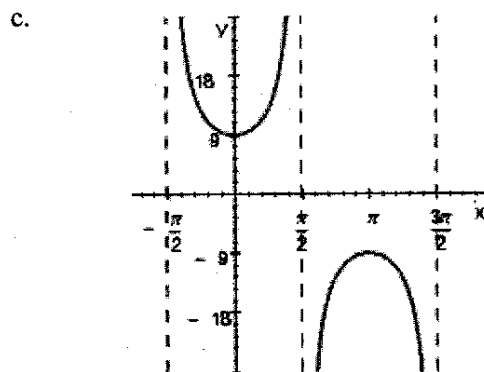
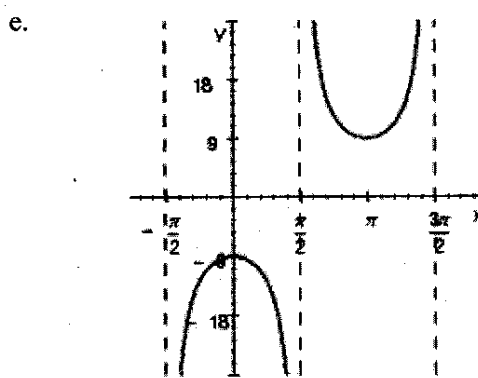
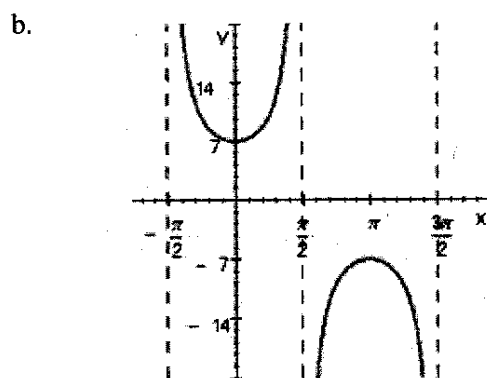
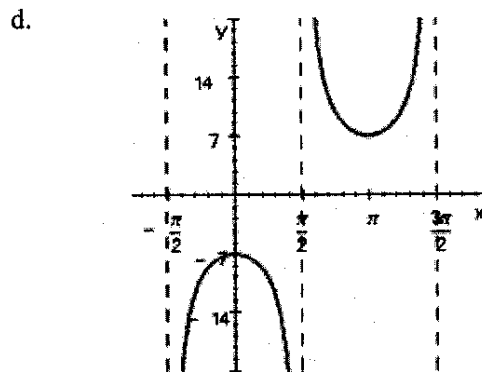
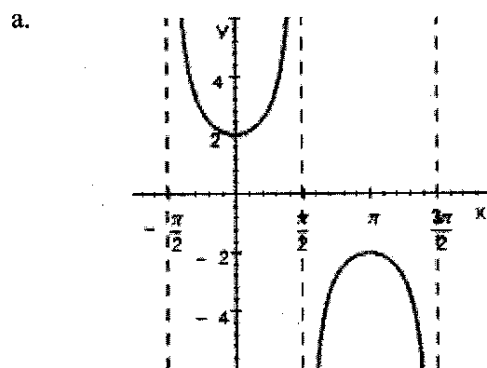
10. Using the graph of $y = \frac{3}{2} \cos 3x$ for reference, select the correct graph for

$$y = 1 + \frac{3}{2} \cos 3x$$

$$y = \frac{3}{2} \cos 3x$$

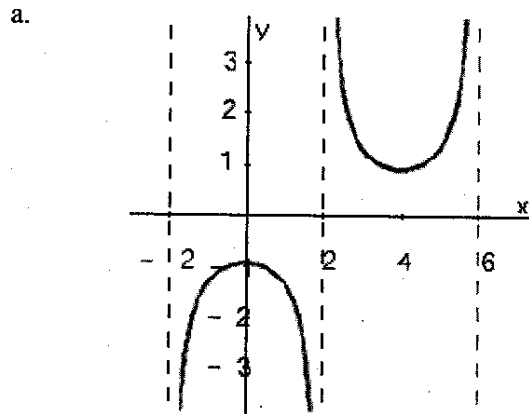


11. Graph one complete cycle of $y = 7 \sec x$. Label the axes accurately.

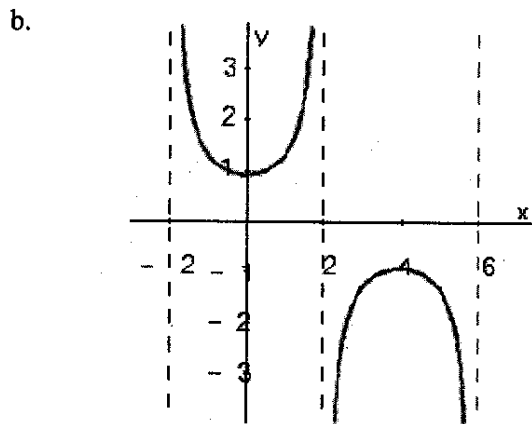


12. Identify the graph of the function

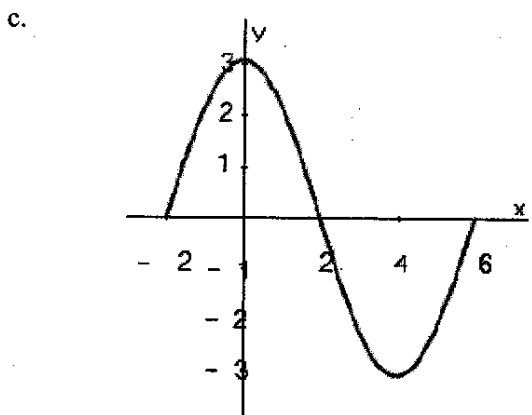
$$y = \sec \frac{\pi}{4} x$$



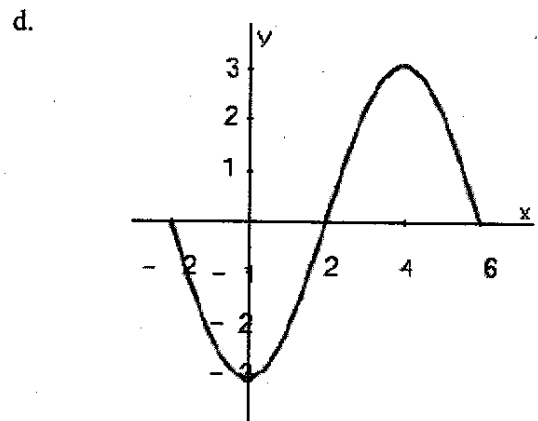
Period = 8



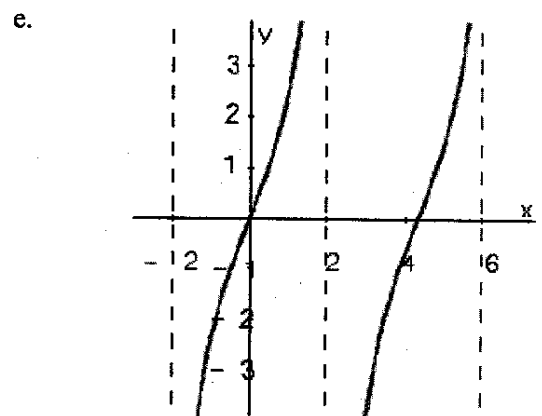
Period = 8



Period = 8



Period = 8

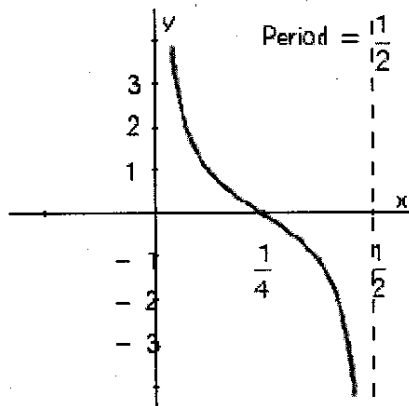


Period = 8

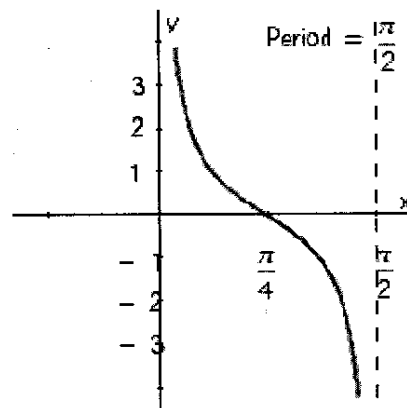
13. Graph one complete cycle of the graph. Label the axes accurately and identify the period.

$$y = \cot 2\pi x$$

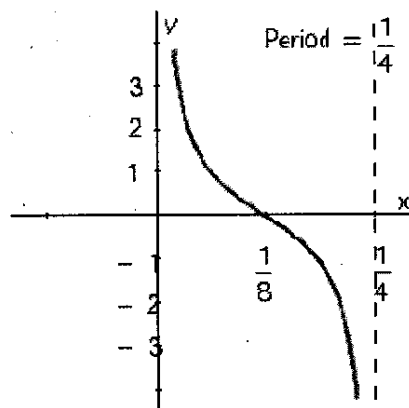
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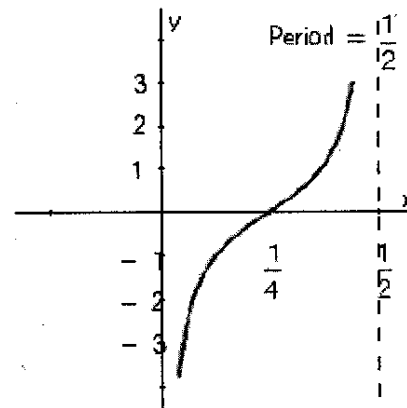
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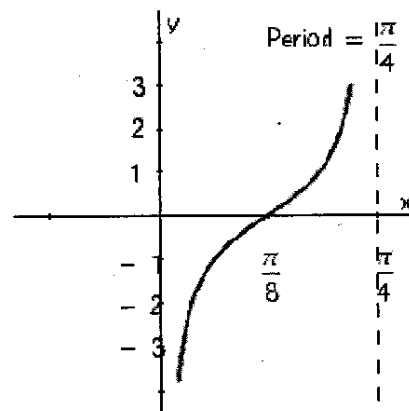
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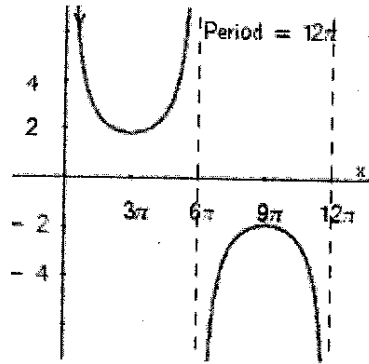
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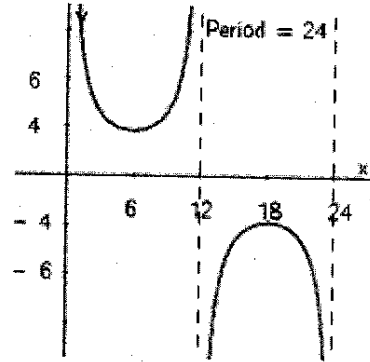
14. Identify the correct graph of the function:

$$y = 2 \csc \frac{1}{6} x$$

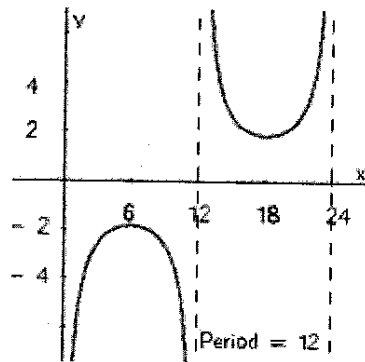
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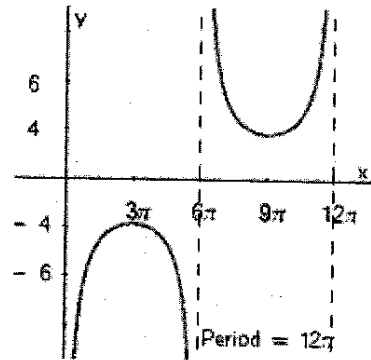
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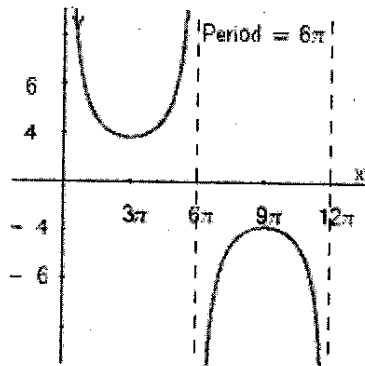
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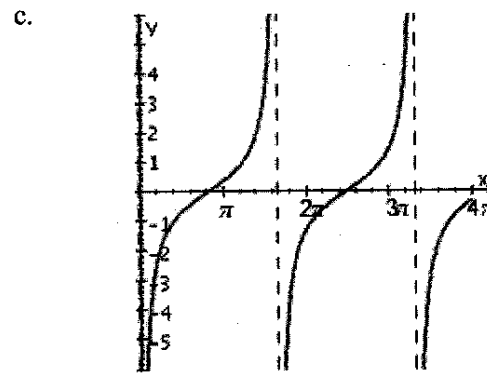
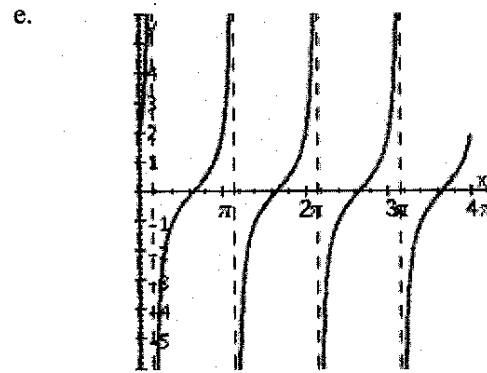
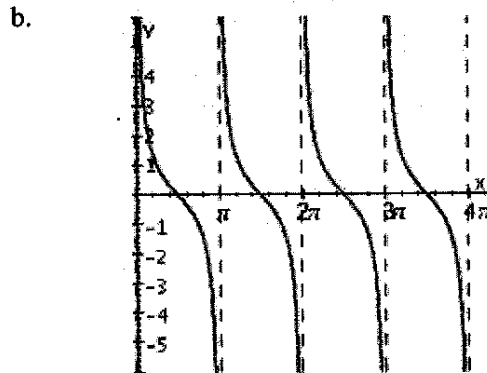
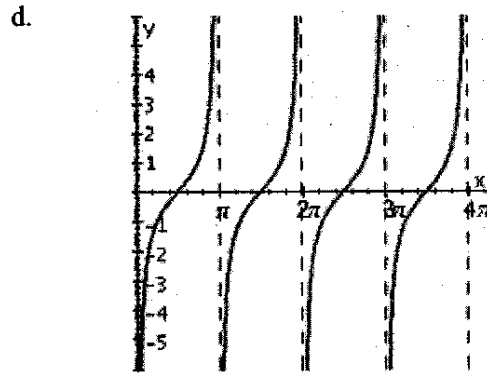
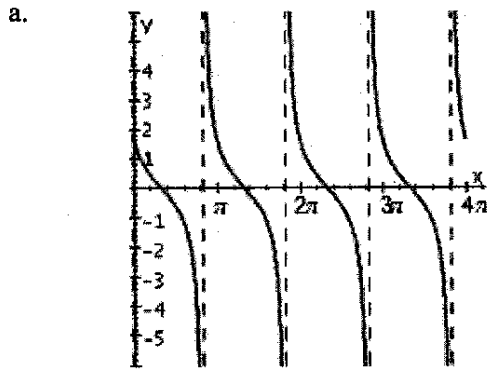


15. The periods for $y = \tan x$ and $y = \cot x$ are π .

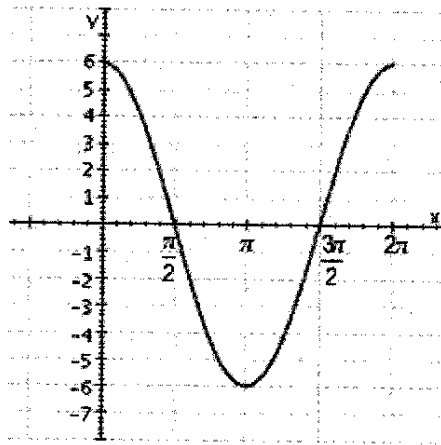
The graphs of $y = \tan(Bx + C)$ and $y = \cot(Bx + C)$ will have periods = $\frac{\pi}{B}$ and phase shifts = $-\frac{C}{B}$, for $B > 0$.

Use these facts to identify the graph of the function

$$y = \tan\left(x + \frac{\pi}{2}\right)$$

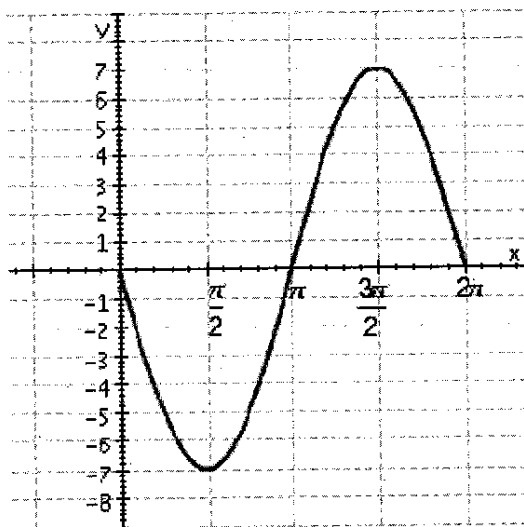


16. The graph below is one complete cycle of the graph of an equation containing a trigonometric function. Find an equation to match the graph. If you are using a graphing calculator, graph your equation to verify that it is correct.



- a. $y = 9\cos x$
- b. $y = 4\cos x$
- c. $y = 6\cos x$
- d. $y = 5\cos x$
- e. $y = 2\cos x$

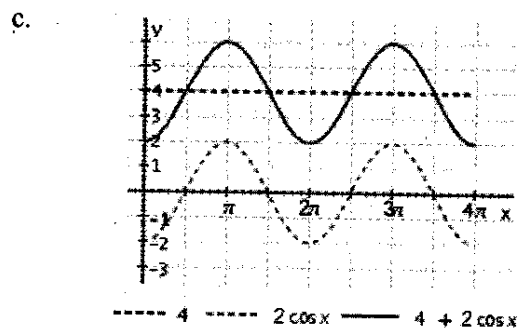
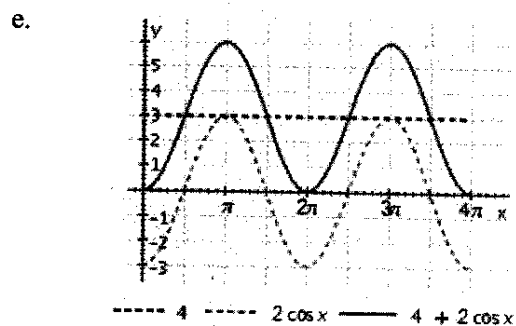
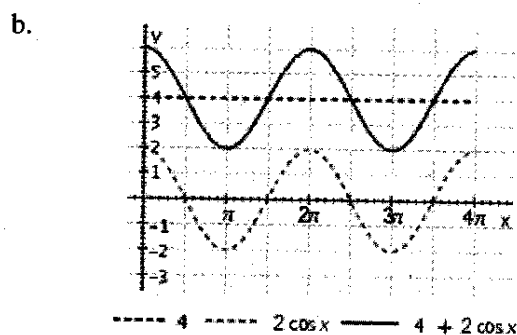
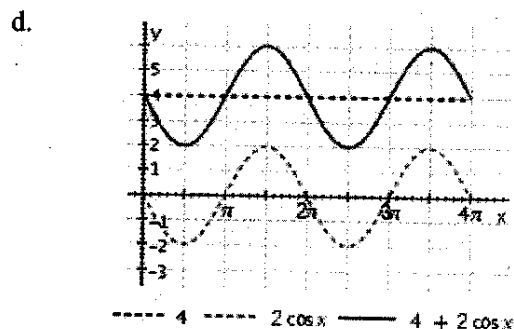
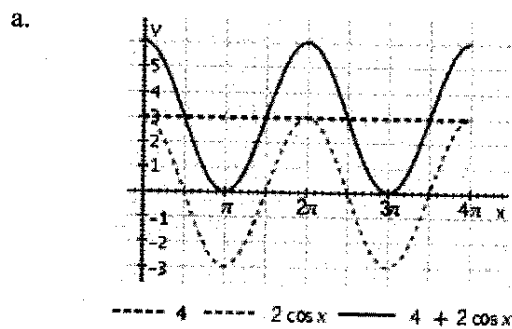
17. The graph below is one complete cycle of the graph of an equation containing a trigonometric function. Find an equation to match the graph. If you are using a graphing calculator, graph your equation to verify that it is correct.



- a. $y = -7 \sin x$
- b. $y = -5 \sin x$
- c. $y = -3 \sin x$
- d. $y = -6 \sin x$
- e. $y = -4 \sin x$

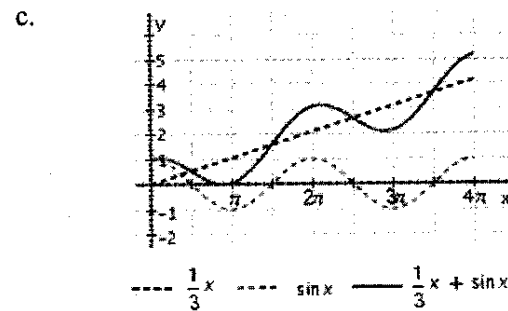
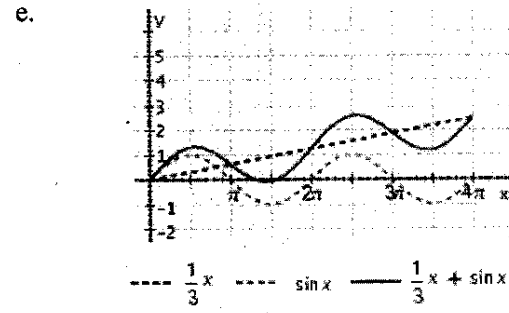
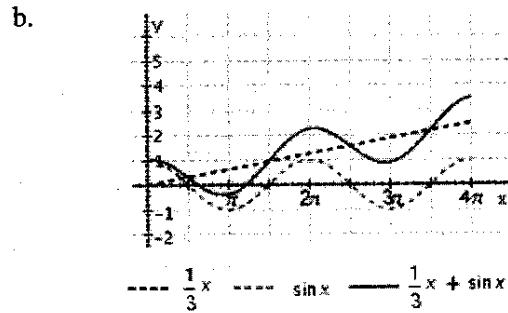
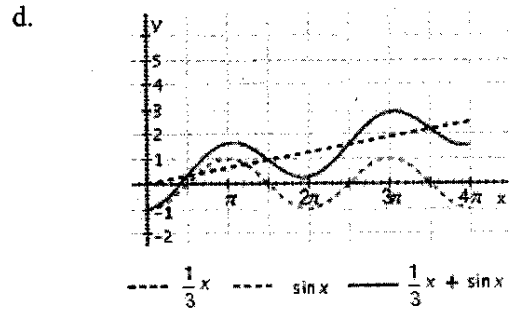
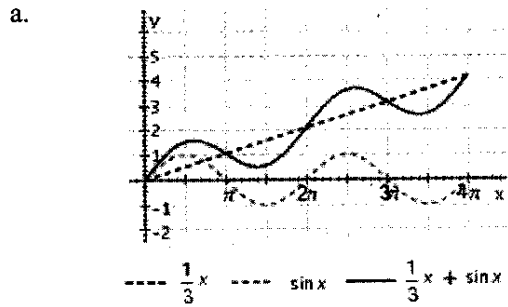
18. Use addition of y-coordinates to sketch the graph of the function between $x = 0$ and $x = 4\pi$.

$$y = 4 + 2 \cos x$$



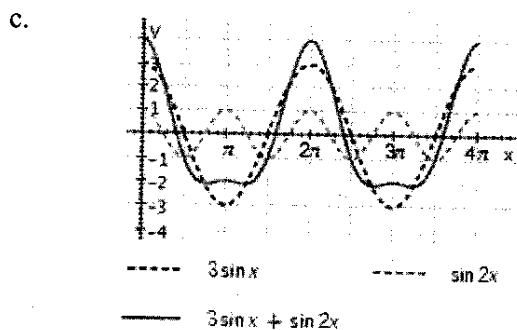
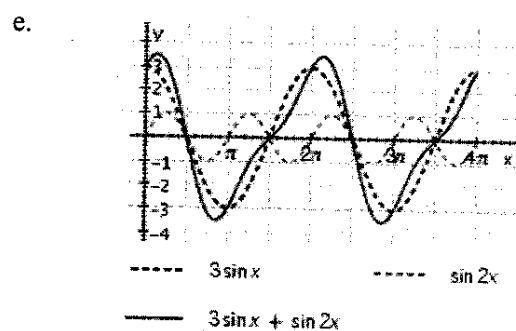
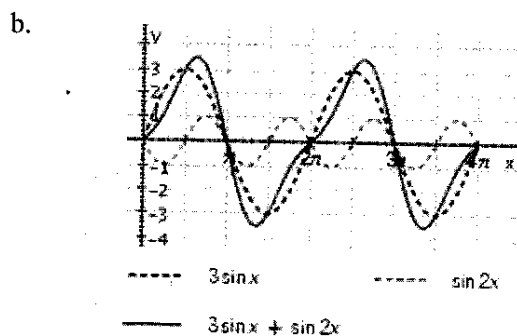
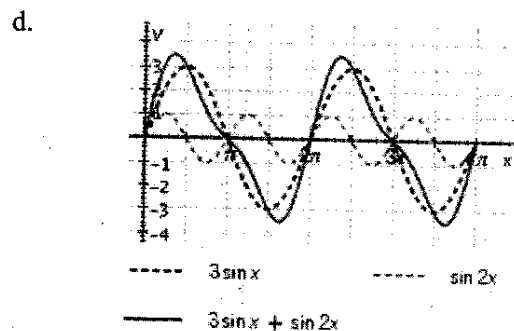
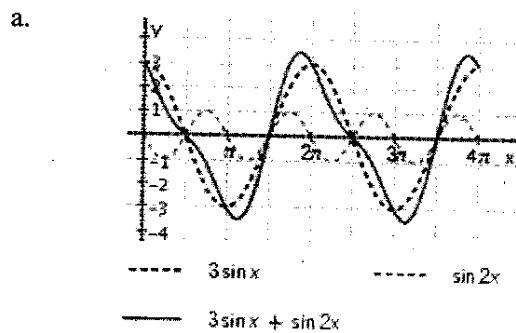
19. Use addition of y-coordinates to sketch the graph of the function between $x=0$ and $x=4\pi$.

$$y = \frac{1}{3}x + \sin x$$



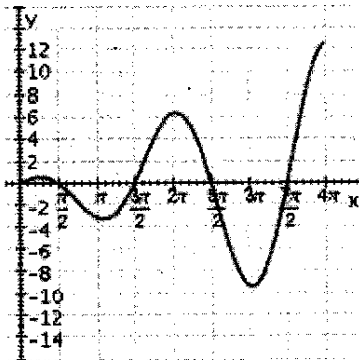
20. Sketch the graph from $x = 0$ to $x = 4\pi$.

$$y = 3\sin x + \sin 2x$$

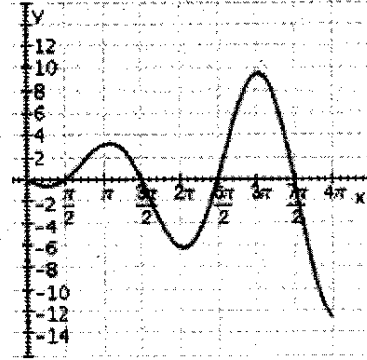


21. Sketch the graph of $y = x \sin x$.

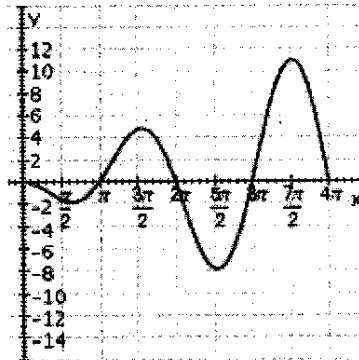
a.



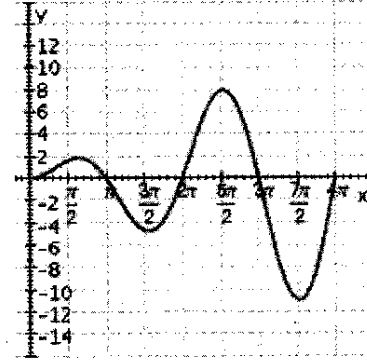
d.



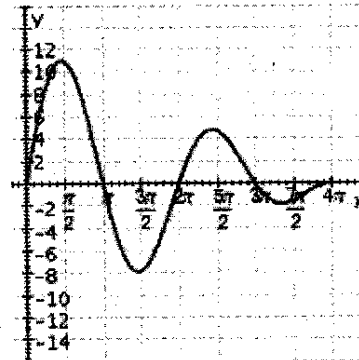
b.



e.



c.



- ___ 22. Evaluate the expression without using a calculator, and write your answer in radians.

$$\cos^{-1}\left(-\frac{\sqrt{3}}{2}\right)$$

- a. 0
- b. $\frac{5\pi}{6}$
- c. $\frac{\pi}{3}$
- d. $\frac{\pi}{2}$
- e. $\frac{\pi}{6}$

- ___ 23. Use a calculator to evaluate each expression to the nearest tenth of a degree.

$$\sin^{-1}(-0.3951)$$

- a. -26.7°
- b. -17.8°
- c. -22.1°
- d. -20.0°
- e. -23.3°

- ___ 24. Evaluate without using a calculator.

$$\sin\left(\sin^{-1}\frac{3}{8}\right)$$

- a. $\frac{3}{8}$
- b. $\frac{8}{9}$
- c. $\frac{3}{5}$
- d. $\frac{7}{8}$
- e. $\frac{5}{8}$

____ 25. Evaluate without using a calculator.

$$\cos^{-1}(\cos 150^\circ)$$

- a. 120°
- b. 150°
- c. 195°
- d. 90°
- e. 45°

Chapter 4
Answer Section

MULTIPLE CHOICE

1. ANS: E PTS: 1
2. ANS: B PTS: 1
3. ANS: A PTS: 1
4. ANS: E PTS: 1
5. ANS: A PTS: 1
6. ANS: B PTS: 1
7. ANS: C PTS: 1
8. ANS: C PTS: 1
9. ANS: D PTS: 1
10. ANS: D PTS: 1
11. ANS: B PTS: 1
12. ANS: B PTS: 1
13. ANS: A PTS: 1
14. ANS: A PTS: 1
15. ANS: D PTS: 1
16. ANS: C PTS: 1
17. ANS: A PTS: 1
18. ANS: B PTS: 1
19. ANS: A PTS: 1
20. ANS: D PTS: 1
21. ANS: E PTS: 1
22. ANS: B PTS: 1
23. ANS: E PTS: 1
24. ANS: A PTS: 1
25. ANS: B PTS: 1

