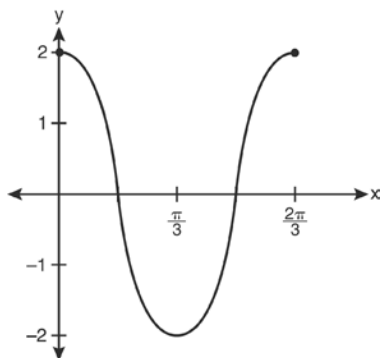


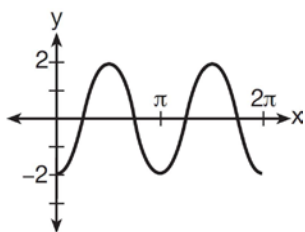
A2.A.72: Identifying the Equation of a Trigonometric Graph 1: Write the trigonometric function that is represented by a given periodic graph

- 1 Which equation is represented by the graph below?



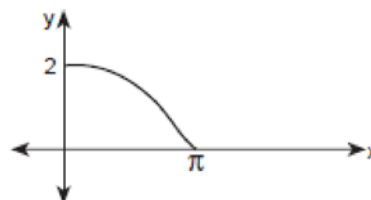
- 1) $y = 2 \cos 3x$
- 2) $y = 2 \sin 3x$
- 3) $y = 2 \cos \frac{2\pi}{3}x$
- 4) $y = 2 \sin \frac{2\pi}{3}x$

- 2 Which equation represents the graph below?



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

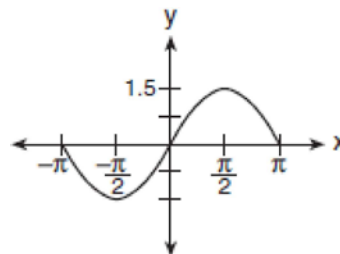
- 3 The accompanying diagram shows a section of a sound wave as displayed on an oscilloscope.



Which equation could represent this graph?

- 1) $y = 2 \cos \frac{x}{2}$
- 2) $y = 2 \sin \frac{x}{2}$
- 3) $y = \frac{1}{2} \cos \frac{x}{2}$
- 4) $y = \frac{1}{2} \sin \frac{\pi}{2}x$

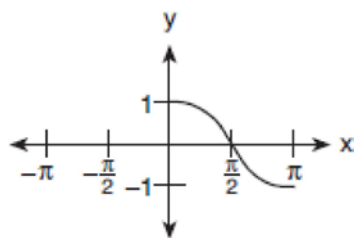
- 4 A radio transmitter sends a radio wave from the top of a 50-foot tower. The wave is represented by the accompanying graph.



What is the equation of this radio wave?

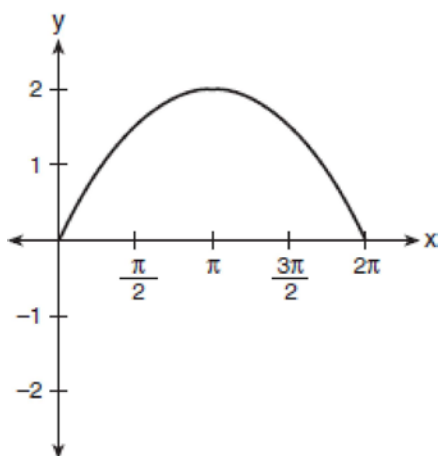
- 1) $y = \sin x$
- 2) $y = 1.5 \sin x$
- 3) $y = \sin 1.5x$
- 4) $y = 2 \sin x$

- 5 Which equation is represented by the accompanying graph?



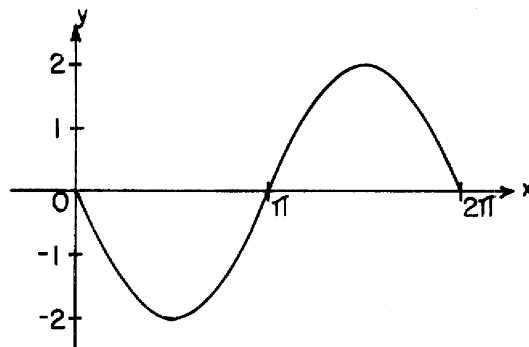
- 1) $y = \cos x$
- 2) $y = \cos \frac{1}{2}x$
- 3) $y = \cos 2x$
- 4) $y = \frac{1}{2} \cos x$

- 6 Which equation is represented by the accompanying graph?



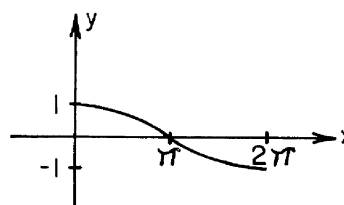
- 1) $y = 2 \sin \frac{1}{2}x$
- 2) $y = 2 \sin x$
- 3) $y = \sin \frac{1}{2}x$
- 4) $y = \sin 2x$

- 7 Which is an equation of the graph shown below?



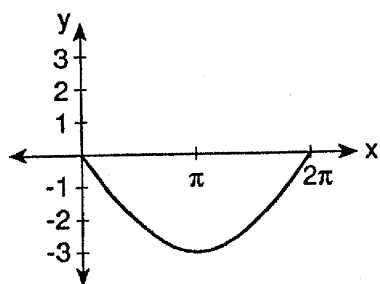
- 1) $y = \sin 2x$
- 2) $y = -\sin 2x$
- 3) $y = -2 \sin x$
- 4) $y = 2 \sin x$

- 8 Which is an equation of the graph shown below?



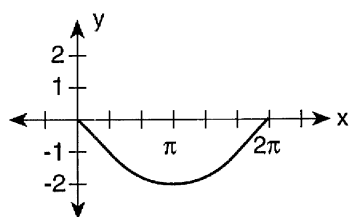
- 1) $y = \cos \frac{1}{2}x$
- 2) $y = \cos 2x$
- 3) $y = \sin \frac{1}{2}x$
- 4) $y = \sin 2x$

- 9 Which equation is represented by the graph in the diagram below?



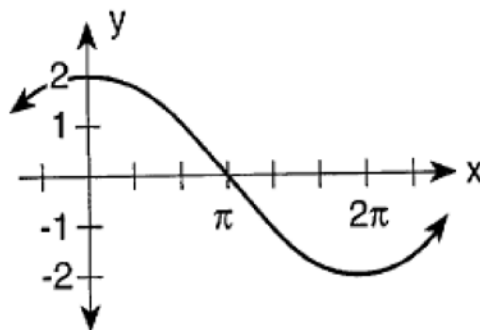
- 1) $y = 3 \sin 2x$
- 2) $y = 3 \sin \frac{1}{2} x$
- 3) $y = -3 \sin 3x$
- 4) $y = -3 \sin \frac{1}{2} x$

- 10 Which equation is represented by the graph below?



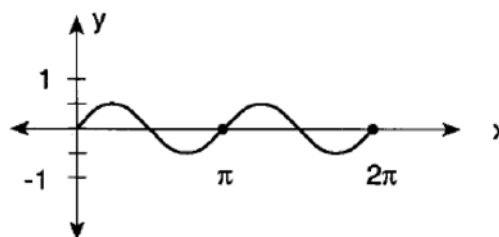
- 1) $y = -2 \sin \frac{1}{2} x$
- 2) $y = -\frac{1}{2} \sin 2x$
- 3) $y = \frac{1}{2} \sin 2x$
- 4) $y = 2 \sin \frac{1}{2} x$

- 11 Which equation is represented in the graph below?



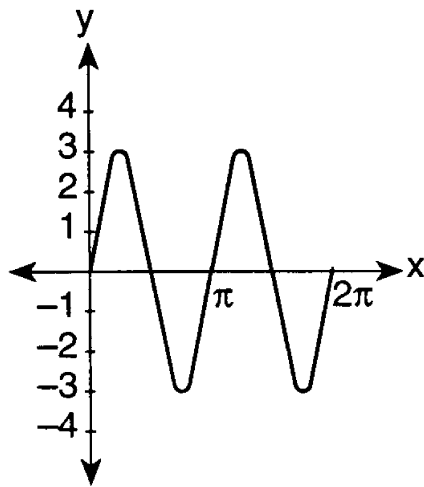
- 1) $y = 2 \cos 2x$
- 2) $y = \frac{1}{2} \cos 2x$
- 3) $y = 2 \cos \frac{1}{2} x$
- 4) $y = \frac{1}{2} \cos \frac{1}{2} x$

- 12 Which equation is represented in the accompanying graph?



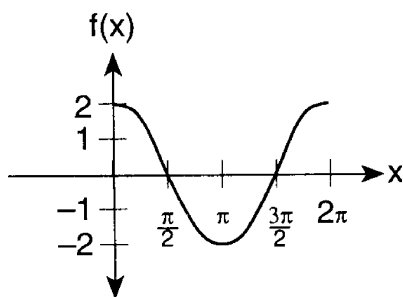
- 1) $y = 2 \sin 2x$
- 2) $y = \frac{1}{2} \sin \frac{1}{2} x$
- 3) $y = 2 \sin \frac{1}{2} x$
- 4) $y = \frac{1}{2} \sin 2x$

- 13 Which equation is represented by the graph in the accompanying diagram?



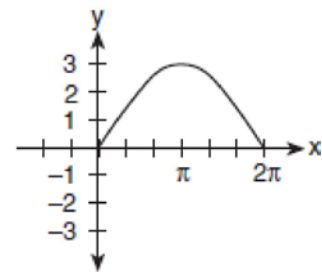
- 1) $y = 3 \sin 2x$
- 2) $y = 2 \sin 3x$
- 3) $y = 3 \sin x$
- 4) $y = 2 \sin 4x$

- 14 Which trigonometric function is shown in the graph below?



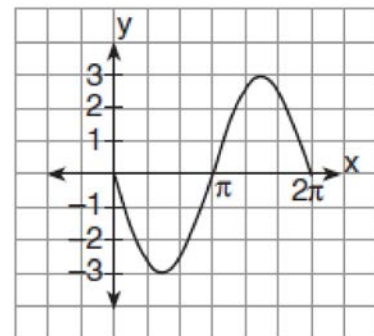
- 1) $f(x) = 2 \sin x$
- 2) $f(x) = 2 \cos x$
- 3) $f(x) = \cos 2x$
- 4) $f(x) = \sin 2x$

- 15 Which equation is represented by the graph in the accompanying diagram?



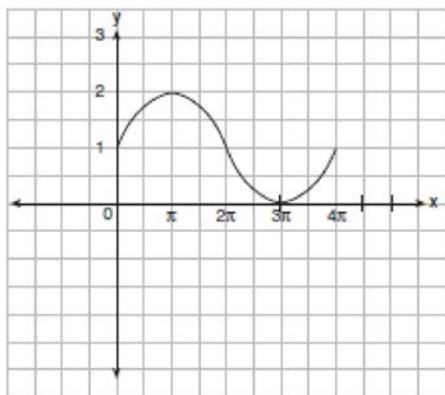
- 1) $y = 3 \sin 2x$
- 2) $y = 3 \sin \frac{1}{2}x$
- 3) $y = 2 \sin 3x$
- 4) $y = \frac{1}{2} \sin 3x$

- 16 Which equation is represented on the graph shown below?



- 1) $y = 3 \sin x$
- 2) $y = -3 \sin x$
- 3) $y = 3 \cos x$
- 4) $y = -\sin 3x$

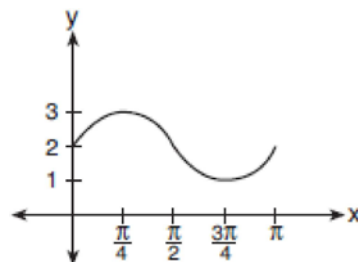
- 17 In physics class, Eva noticed the pattern shown in the accompanying diagram on an oscilloscope.



Which equation best represents the pattern shown on this oscilloscope?

- 1) $y = \sin\left(\frac{1}{2}x\right) + 1$
- 2) $y = \sin x + 1$
- 3) $y = 2 \sin x + 1$
- 4) $y = 2 \sin\left(-\frac{1}{2}x\right) + 1$

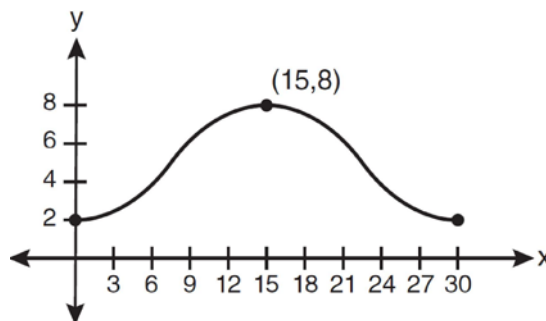
- 18 The accompanying graph represents a portion of a sound wave.



Which equation best represents this graph?

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

- 19 Which equation is graphed in the diagram below?



- 1) $y = 3 \cos\left(\frac{\pi}{30}x\right) + 8$
- 2) $y = 3 \cos\left(\frac{\pi}{15}x\right) + 5$
- 3) $y = -3 \cos\left(\frac{\pi}{30}x\right) + 8$
- 4) $y = -3 \cos\left(\frac{\pi}{15}x\right) + 5$

A2.A.72: Identifying the Equation of a Trigonometric Graph 1: Write the trigonometric function that is represented by a given periodic graph

Answer Section

1 ANS: 1 REF: 011320a2

2 ANS: 3 REF: 061306a2

3 ANS: 1

Since none of the answers has a translation, the point (0,2) must result from a dilation of 2 of the cosine function.

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

$$4\pi = \frac{2\pi}{b}$$

At $x = \pi$, the function is $\frac{1}{4}$ complete, so the period is 4π .

$$b = \frac{2\pi}{4\pi}$$

$$b = \frac{1}{2}$$

REF: 010214b

4 ANS: 2

The maximum and minimum of this sine function indicates the amplitude is 1.5.

REF: 060608b

5 ANS: 1 REF: 060711b

6 ANS: 1 REF: 010419siii

7 ANS: 3 REF: 068633siii

8 ANS: 1 REF: 018917siii

9 ANS: 4 REF: 089522siii

10 ANS: 1 REF: 069721siii

11 ANS: 3 REF: 089725siii

12 ANS: 4 REF: 019822siii

13 ANS: 1 REF: 089820siii

14 ANS: 2 REF: 010019siii

15 ANS: 2 REF: 010119siii

16 ANS: 2 REF: 080121siii

17 ANS: 1

The sine function has been translated +1. Since the maximum is 2 and the minimum is 0, the amplitude is 1.

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

$$4\pi = \frac{2\pi}{b}$$

$$b = \frac{2\pi}{4\pi}$$

$$b = \frac{1}{2}$$

REF: 010612b

18 ANS: 4

The sine function has been translated +2. Since the maximum is 3 and the minimum is 1, the amplitude is 1.

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

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

$$b = 2$$

REF: 080717b

19 ANS: 4

$$\frac{2\pi}{b} = 30$$

$$b = \frac{\pi}{15}$$

REF: 011227a2