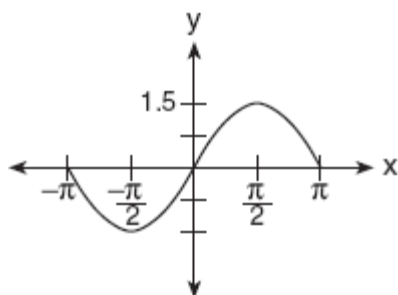


NAME: _____

1. 060608b, P.I. A2.A.72

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

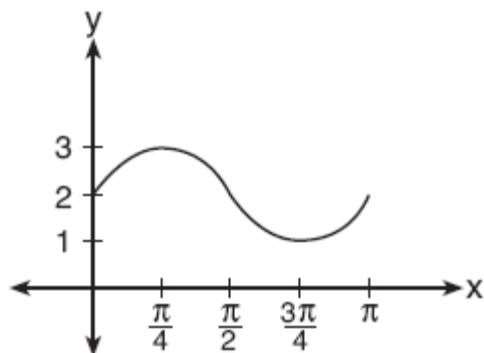


What is the equation of this radio wave?

- [A] $y = \sin 1.5x$ [B] $y = 1.5 \sin x$
 [C] $y = 2 \sin x$ [D] $y = \sin x$

2. 080717b, P.I. A2.A.72

The accompanying graph represents a portion of a sound wave.

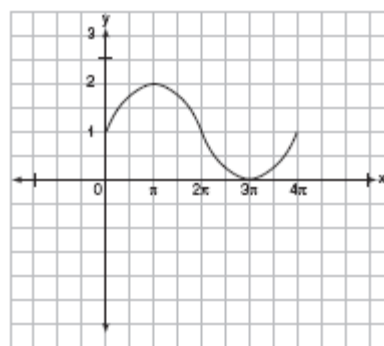


Which equation best represents this graph?

- [A] $y = \sin 2x$ [B] $y = \sin 2x + 2$
 [C] $y = 2 \sin \frac{1}{2}x$ [D] $y = \sin \frac{1}{2}x + 2$

3. 010612b, P.I. A2.A.72

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

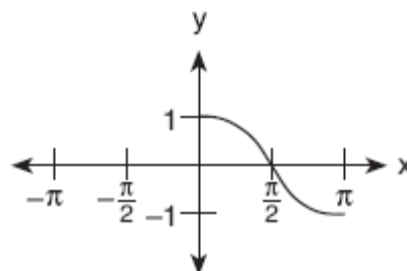


Which equation best represents the pattern shown on this oscilloscope?

- [A] $y = 2 \sin(-\frac{1}{2}x) + 1$
 [B] $y = \sin(\frac{1}{2}x) + 1$
 [C] $y = \sin x + 1$ [D] $y = 2 \sin x + 1$

4. 060711b, P.I. A2.A.72

Which equation is represented by the accompanying graph?

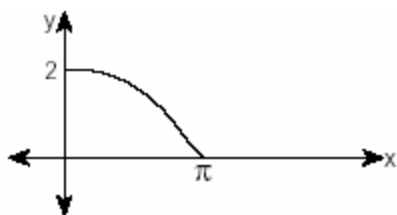


- [A] $y = \cos 2x$ [B] $y = \cos x$
 [C] $y = \frac{1}{2} \cos x$ [D] $y = \cos \frac{1}{2}x$

NAME: _____

5. 010214b, P.I. A2.A.72

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

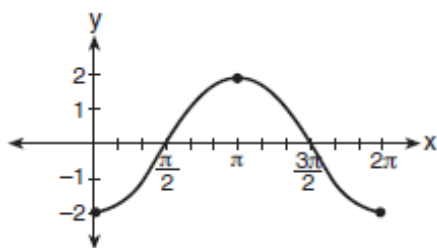


Which equation could represent this graph?

- [A] $y = \frac{1}{2} \cos 2x$ [B] $y = 2 \cos \frac{x}{2}$
 [C] $y = \frac{1}{2} \sin \frac{\pi}{2} x$ [D] $y = 2 \sin \frac{x}{2}$

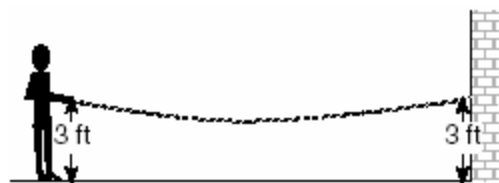
6. 080926b, P.I. A2.A.72

The accompanying graph shows a trigonometric function. State an equation of this function.



7. 080330b, P.I. A2.A.72

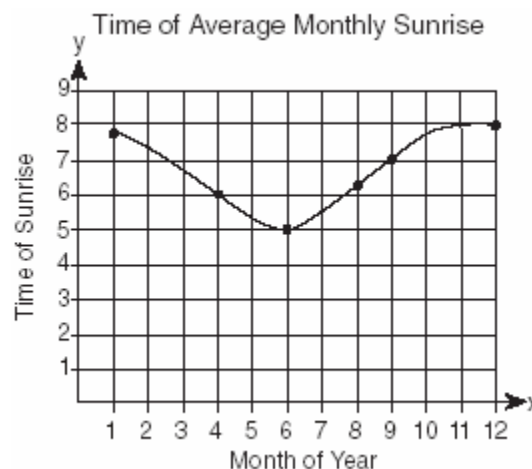
A student attaches one end of a rope to a wall at a fixed point 3 feet above the ground, as shown in the accompanying diagram, and moves the other end of the rope up and down, producing a wave described by the equation $y = a \sin bx + c$. The range of the rope's height above the ground is between 1 and 5 feet. The period of the wave is 4π . Write the equation that represents this wave.



8. 080127b

The times of average monthly sunrise, as shown in the accompanying diagram, over the course of a 12-month interval can be modeled by the equation $y = A \cos(Bx) + D$.

Determine the values of A , B , and D , and explain how you arrived at your values.



[1] B _____

[2] B _____

[3] B _____

[4] B _____

[5] B _____

[2] $y = -2 \cos x$ or an equivalent equation is written.

[1] Appropriate work is shown, but one conceptual error is made.

or [1] Amplitude = 2 and frequency = 1, but no further correct work is shown.

or [1] The expression $-2 \cos x$ is written.

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously

[6] incorrect procedure.

[4] $y = 2 \sin \frac{1}{2}x + 3$ or $y = -2 \sin \frac{1}{2}x + 3$, and

appropriate work is shown.

[3] The fact that c is equal to 3 is not recognized, resulting in an answer of

$y = 2 \sin \frac{1}{2}x$ or $y = -2 \sin \frac{1}{2}x$.

or [3] The values of a, b, and c are determined correctly, and appropriate work is shown, but the equation is not written.

or [3] The value of a or c is determined incorrectly, but the value of b is determined correctly, and appropriate work is shown, and an appropriate equation is written.

[2] Only the value of b is determined correctly, but appropriate work is shown, and an appropriate equation is written.

or [2] Only the values of a and c are determined correctly, but appropriate work is shown, and an appropriate equation is written.

[1] The value of a or c is determined incorrectly, and the value of b is not determined or is determined incorrectly, but appropriate work is shown, and an appropriate equation is written.

or [1] $y = 2 \sin \frac{1}{2}x + 3$ or $y = -2 \sin \frac{1}{2}x + 3$,

but no work is shown.

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously

[7] incorrect procedure.

[4] $A = 1.5$, $B = 0.5$, and $D = 6.5$ or an equivalent answer, and appropriate work is shown or an appropriate explanation is given for each number found.

[3] Correct answers are found, but appropriate work is shown or an appropriate explanation is given for only two of the numbers found.

[2] Only two correct answers are found, but appropriate work is shown or an appropriate explanation is given for the two answers.

[1] Only one correct answer is found, but appropriate work is shown or an appropriate explanation is given for that answer.

or [1] $A = 1.5$, $B = 0.5$, and $D = 6.5$ or an equivalent answer, but no work is shown.

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously

[8] incorrect procedure.
