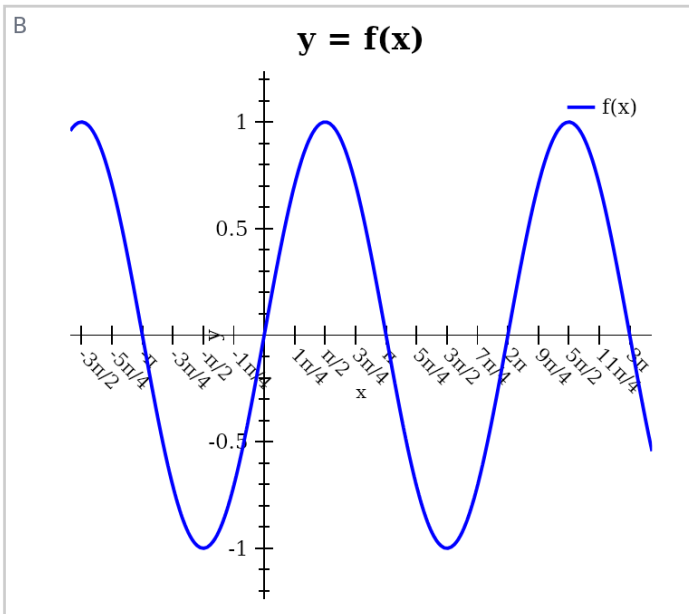
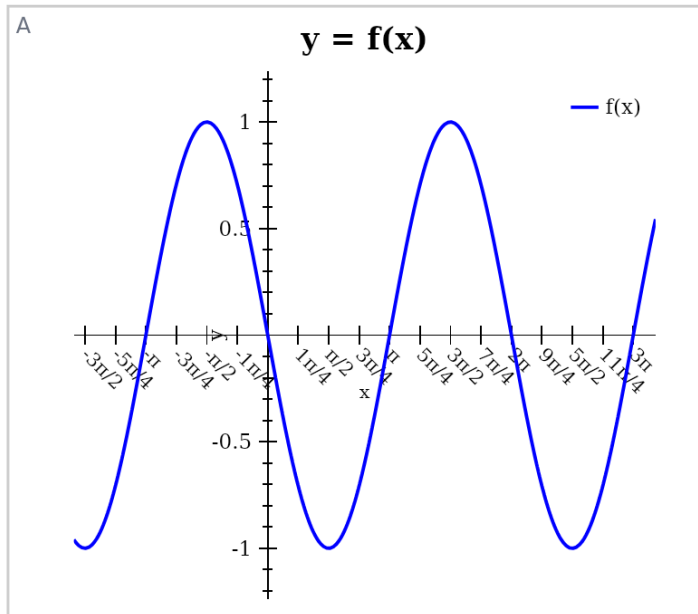


Model periodic phenomena with sinusoidal functions

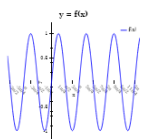
1

Which graph shows a sinusoidal function with this phase shift?

$$f(x) = \cos(x + 8\pi)$$

**2**

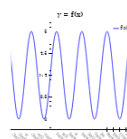
Which function would have a graph with this period?



- | | |
|---------------------|---------------------|
| A $f(x) = \cos(2x)$ | B $f(x) = \cos(6x)$ |
| C $f(x) = \cos(5x)$ | D $f(x) = \cos(4x)$ |

3

Which function would have a graph with this vertical shift?



- | | |
|-------------------------|-------------------------|
| A $f(x) = \sin(2x) + 1$ | B $f(x) = \sin(2x) + 4$ |
| C $f(x) = \sin(2x) - 5$ | D $f(x) = \sin(2x) + 2$ |

4

Which sinusoidal function has these parameters?

Phase Shift = $\frac{5}{2}\pi$ left

Vertical Shift = $\frac{2}{3}$

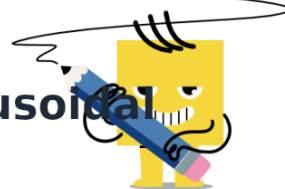
- | |
|---|
| A $f(x) = \sin(x + \frac{5}{2}) + \frac{2}{3}$ |
| B $f(x) = \sin(x + \frac{5}{2}\pi) + \frac{2}{3}$ |

5

Which sinusoidal function has these parameters?

Amplitude = $\frac{2}{7}$
Period = $\frac{5}{4}$
Phase Shift = $\frac{5}{2}\pi$
Vertical Shift = $\frac{8}{5}$

- | |
|--|
| A $f(x) = \frac{2}{7}\sin(4\pi x + \frac{5}{2}) + \frac{8}{5}$ |
| B $f(x) = \frac{2}{7}\sin(\frac{5}{2}\pi x + 4) + \frac{8}{5}$ |



Model periodic phenomena with sinusoidal functions

6

What are the period and phase shift of this sinusoidal function?

$$f(x) = \sin\left(\frac{2}{3}x + 2\right)$$

A

$$\begin{aligned}\text{Period} &= \frac{6\pi}{2} \\ \text{Phase Shift} &= 2\pi \text{ left}\end{aligned}$$

B

$$\begin{aligned}\text{Period} &= \frac{2\pi}{2} \\ \text{Phase Shift} &= \frac{2}{3} \text{ left}\end{aligned}$$

C

$$\begin{aligned}\text{Period} &= \frac{6\pi}{2} \\ \text{Phase Shift} &= 2 \text{ right}\end{aligned}$$

D

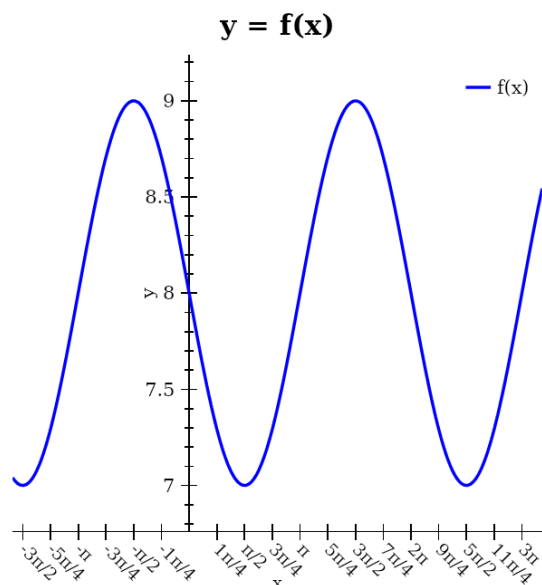
$$\begin{aligned}\text{Period} &= \frac{6\pi}{2} \\ \text{Phase Shift} &= 2 \text{ left}\end{aligned}$$

7

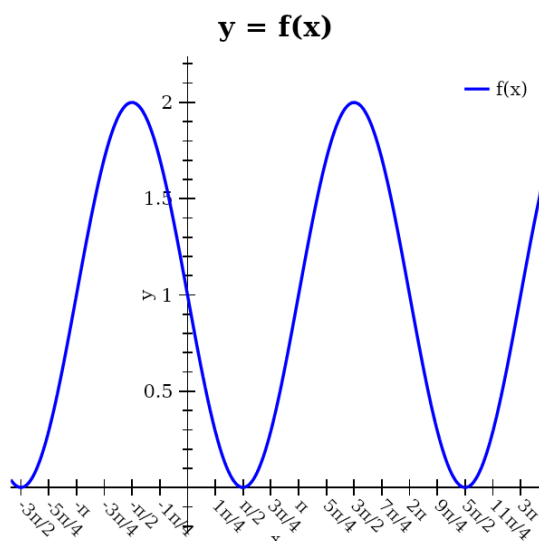
Which graph shows a sinusoidal function with this vertical shift?

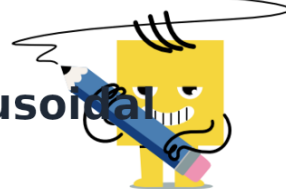
$$f(x) = \cos(x + 3\pi) + 8$$

A



B





Model periodic phenomena with sinusoidal functions

- 8 What are the phase shift, period, and vertical shift of this sinusoidal function?

$$f(x) = \sin\left(\frac{3}{7}x + \frac{2}{7}\right) + \frac{2}{3}$$

A

$$\text{Period} = \frac{14\pi}{3}$$

$$\text{Phase Shift} = \frac{2}{7} \text{ left}$$

$$\text{Vertical Shift} = \frac{2}{3}$$

B

$$\text{Period} = \frac{6\pi}{2}$$

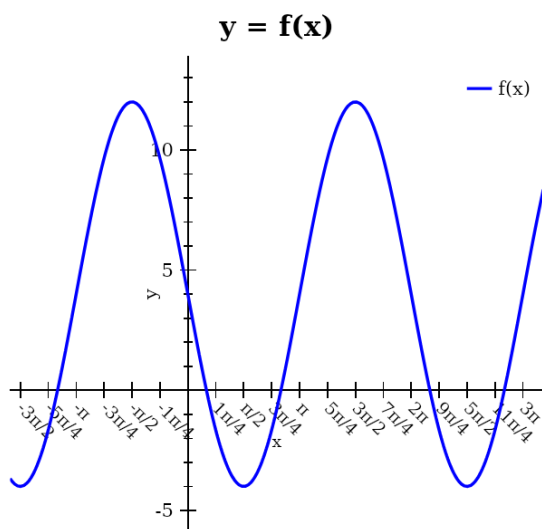
$$\text{Phase Shift} = \frac{2}{7} \text{ left}$$

$$\text{Vertical Shift} = \frac{3}{7}$$

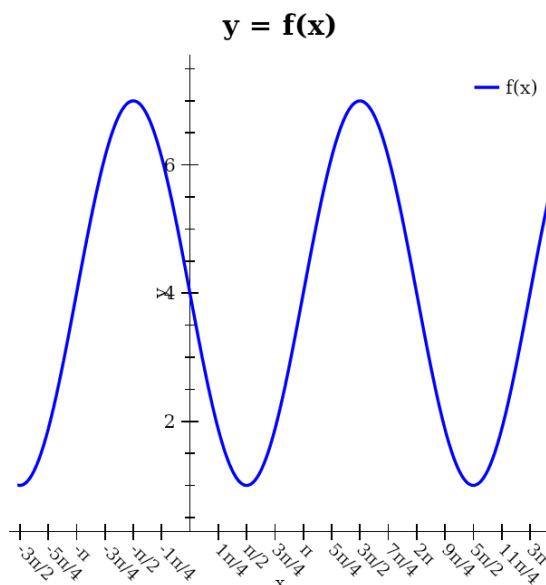
- 9 Which graph shows a sinusoidal function with this amplitude?

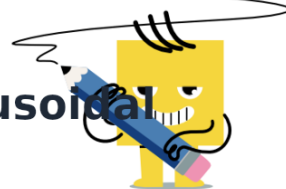
$$f(x) = -8\sin(x + 6\pi) + 4$$

A



B

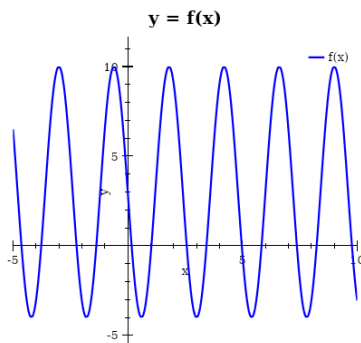




Model periodic phenomena with sinusoidal functions

10

Which function would have a graph with this vertical shift?



A

$$f(x) = -7 \cos\left(\frac{5}{6}\pi x\right) + 3$$

B

$$f(x) = -7 \cos\left(\frac{5}{6}\pi x\right) - 4$$

C

$$f(x) = -7 \cos\left(\frac{5}{6}\pi x\right) + 1$$

D

$$f(x) = -7 \cos\left(\frac{5}{6}\pi x\right) - 1$$

11

What are the period, vertical shift, amplitude, and phase shift of this sinusoidal function?

$$f(x) = -\frac{7}{2} \cos\left(\frac{6}{7}x + \frac{8}{3}\right) + \frac{2}{5}$$

A

$$\text{Amplitude} = \frac{7}{2}$$

$$\text{Period} = \frac{14\pi}{6}$$

$$\text{Phase Shift} = \frac{8}{3} \text{ right}$$

$$\text{Vertical Shift} = \frac{2}{5}$$

B

$$\text{Amplitude} = \frac{7}{2}$$

$$\text{Period} = \frac{14\pi}{6}$$

$$\text{Phase Shift} = \frac{8}{3} \text{ left}$$

$$\text{Vertical Shift} = \frac{2}{5}$$