

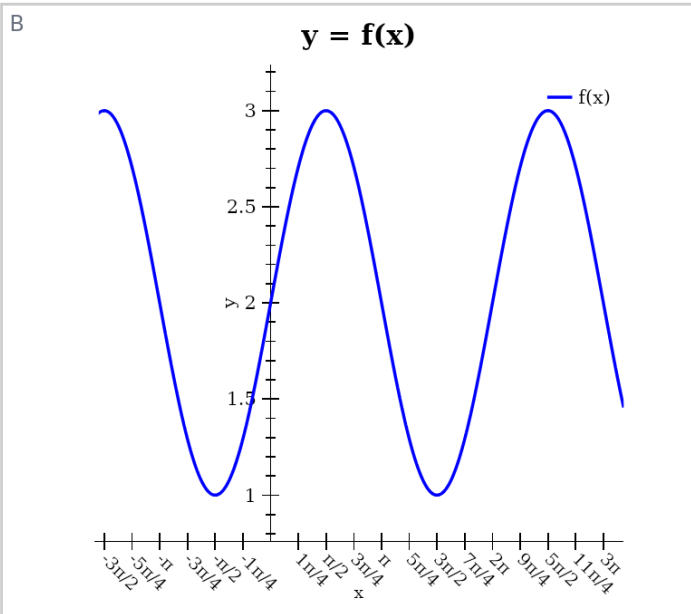
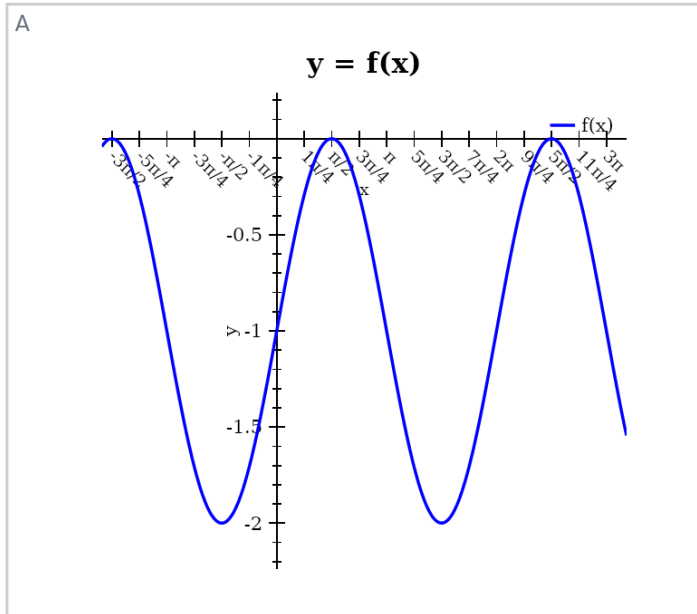


Model periodic phenomena with trigonometric functions

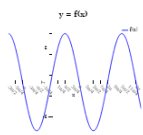
1

Which graph shows a sinusoidal function with this vertical shift?

$$f(x) = \cos(x) + 2$$

**2**

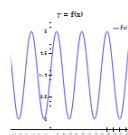
Which function would have a graph with this amplitude?



- | | |
|----------------------|----------------------|
| A $f(x) = -2\sin(x)$ | B $f(x) = 7\sin(x)$ |
| C $f(x) = 3\sin(x)$ | D $f(x) = -1\sin(x)$ |

3

Which function would have a graph with this vertical shift?



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

4

Which sinusoidal function has these parameters?

$$\text{Period} = \frac{22}{5}$$
$$\text{Phase Shift} = \frac{6}{11}\pi \text{ left}$$

- | |
|--|
| A $f(x) = \frac{5}{11}\sin(\pi x + \frac{6}{11}\pi)$ |
| B $f(x) = \sin(\frac{5}{11}\pi x + \frac{6}{11}\pi)$ |

5

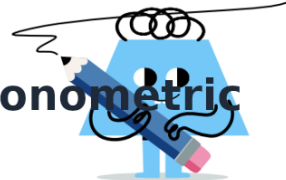
Which sinusoidal function has these parameters?

$$\text{Amplitude} = \frac{1}{5}$$
$$\text{Period} = \frac{22}{5}$$
$$\text{Phase Shift} = \frac{5}{11}\pi$$
$$\text{Vertical Shift} = \frac{5}{2}$$

- | |
|---|
| A $f(x) = -\frac{4}{5}\sin(\frac{5}{11}x + \frac{5}{7}\pi) + \frac{5}{2}$ |
| B $f(x) = -\frac{4}{5}\sin(\frac{5}{11}\pi x + \frac{5}{7}\pi) + \frac{5}{2}$ |



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**6**

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

$$f(x) = \frac{3}{11} \cos(x) + \frac{6}{5}$$

A

$$\begin{aligned}\text{Amplitude} &= \frac{3}{11} \\ \text{Vertical Shift} &= \frac{6}{5}\end{aligned}$$

B

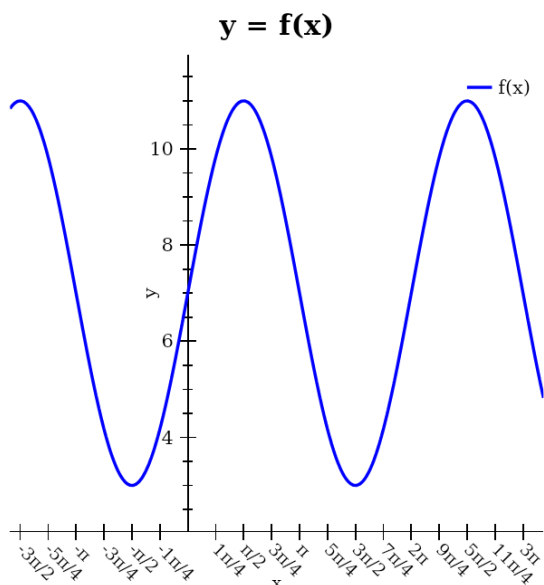
$$\begin{aligned}\text{Amplitude} &= \frac{6}{5} \\ \text{Vertical Shift} &= \frac{3}{11}\end{aligned}$$

7

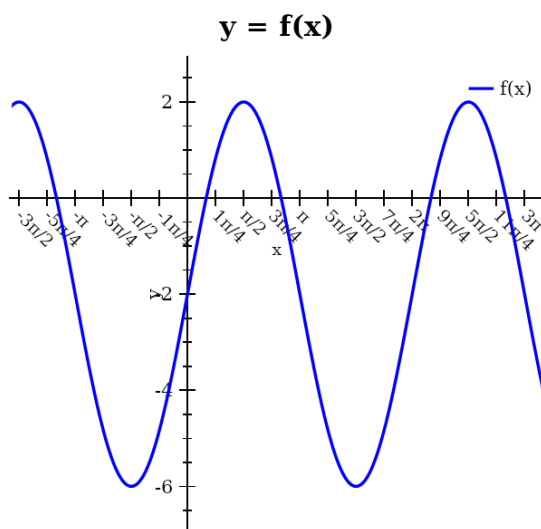
Which graph shows a sinusoidal function with this vertical shift?

$$f(x) = 4 \sin(x) + 7$$

A



B





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

$$f(x) = \frac{5}{7} \cos\left(\frac{4}{5}\pi x + \frac{4}{11}\right)$$

A

$$\text{Amplitude} = \frac{5}{7}$$

$$\text{Period} = \frac{10}{4}$$

$$\text{Phase Shift} = \frac{4}{11}\pi \text{ left}$$

B

$$\text{Amplitude} = \frac{5}{7}$$

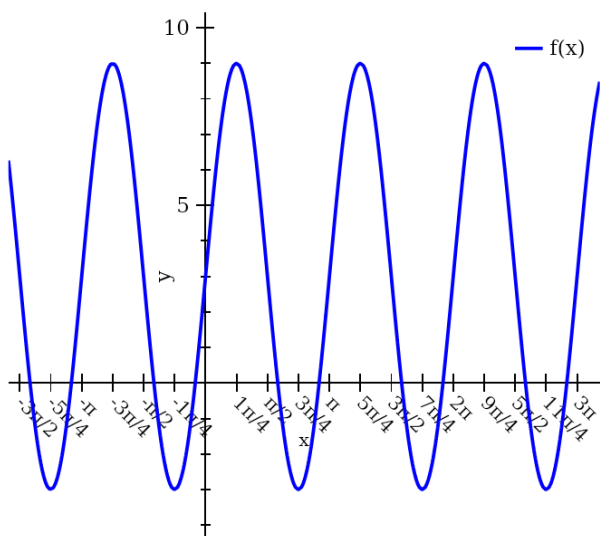
$$\text{Period} = \frac{10}{4}$$

$$\text{Phase Shift} = \frac{4}{11} \text{ left}$$

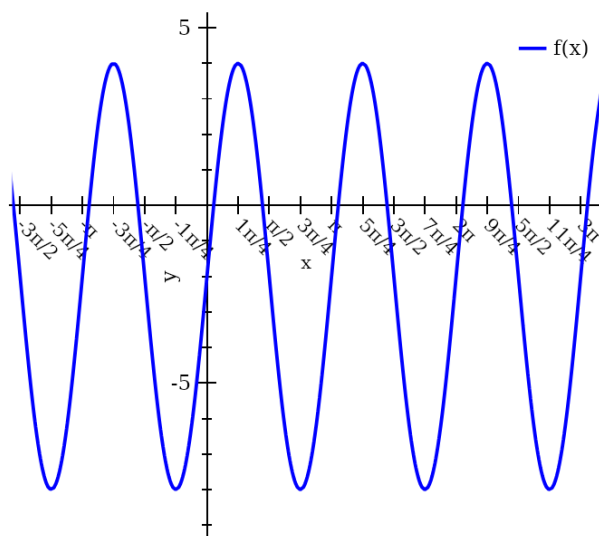
- 9 Which graph shows a sinusoidal function with this vertical shift?

$$f(x) = 6 \cos(2x) + 3$$

A

 $y = f(x)$ 

B

 $y = f(x)$ 



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10

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

$$f(x) = -\frac{2}{3}\cos\left(\frac{2}{7}\pi x + \frac{2}{5}\pi\right) + \frac{8}{11}$$

A

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

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

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

$$\text{Vertical Shift} = \frac{8}{11}$$

B

$$\text{Amplitude} = \frac{2}{3}$$

$$\text{Period} = \frac{14}{2}$$

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

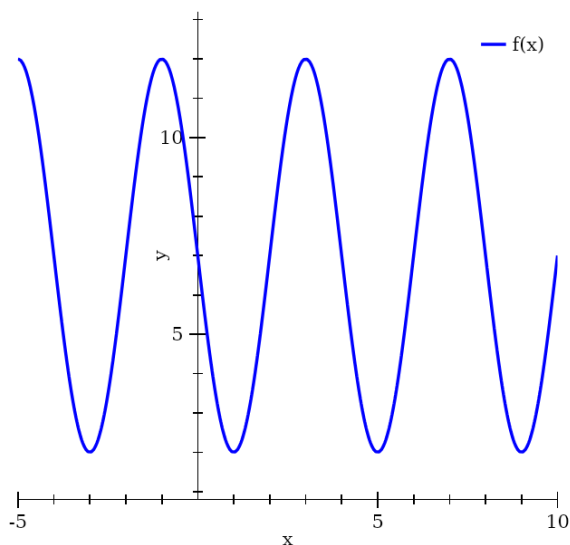
$$\text{Vertical Shift} = \frac{8}{11}$$

11

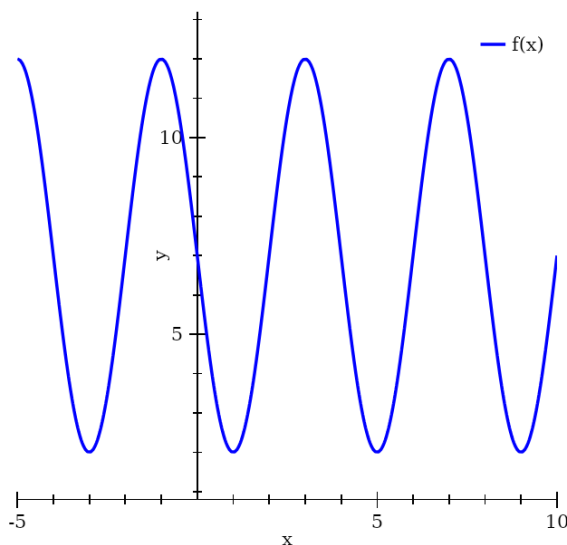
Which graph shows a sinusoidal function with this phase shift?

$$f(x) = -5\sin\left(\frac{1}{2}\pi x + 4\pi\right) + 7$$

A

 $y = f(x)$ 

B

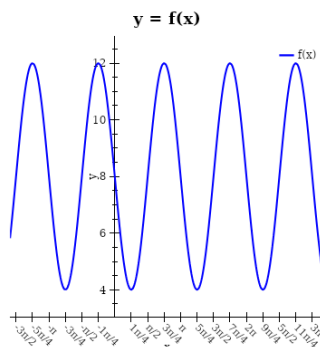
 $y = f(x)$ 



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12

Which function would have a graph with this phase shift?



A

$$f(x) = 4 \cos\left(2x + \frac{1}{6}\pi\right) + 8$$

B

$$f(x) = 4 \cos\left(2x - \frac{8}{6}\pi\right) + 8$$

C

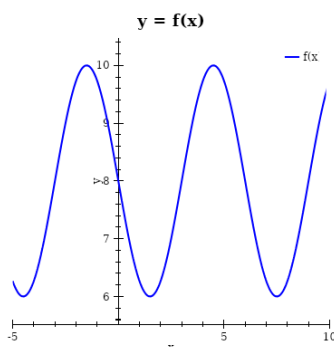
$$f(x) = 4 \cos(2x + 3\pi) + 8$$

D

$$f(x) = 4 \cos\left(2x - \frac{4}{6}\pi\right) + 8$$

13

Which function would have a graph with this vertical shift?



A

$$f(x) = -2 \sin\left(\frac{1}{3}\pi x\right) - 5$$

B

$$f(x) = -2 \sin\left(\frac{1}{3}\pi x\right) + 8$$

C

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

D

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