



Determine phase shift of a sinusoidal function

- 1 What does this transformation produce in $f(x)$?

$$g(x) = f(x) - 3$$

A

Shift up : 3

B

Shift down : 3

- 2 How is the graph of f transformed to produce g ?

$$g(x) = a f(b(x - h)) + k$$

$$(x, y) \mapsto \left(\frac{x}{b} + h, ay + k\right)$$

$$g(x) = f(4x)$$

A reflect over the x-axis

B vertically stretch by a factor of 4

C shift left by 4

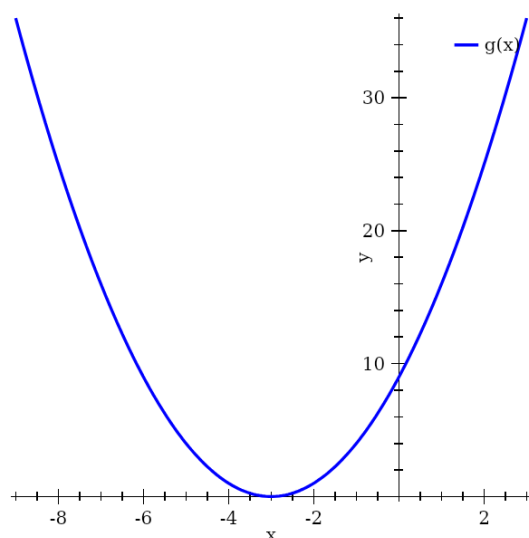
D horizontally compress by a factor of 4

- 3 Which graph shows the transformation of $f(x)$ into $g(x)$?

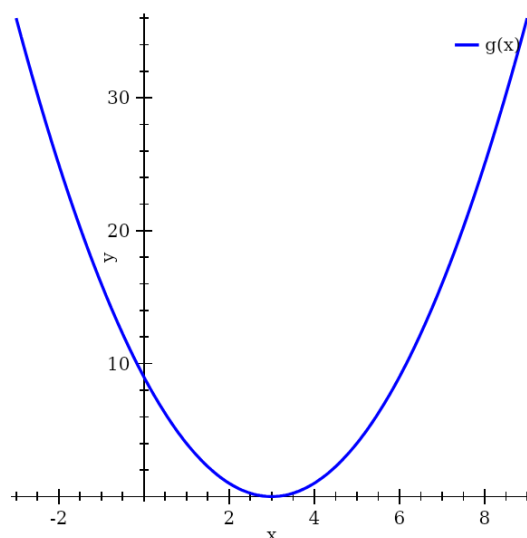
$$f(x) = x^2$$

$$g(x) = f(x - 3)$$

A

 $y = g(x)$ 

B

 $y = g(x)$ 

- 4 Using the mapping notation, how does this variable value transform the graph of f ?

$$g(x) = a f(b(x - h)) + k$$

$$(x, y) \mapsto \left(\frac{x}{b} + h, ay + k\right)$$

$$h = 3$$

A shift right by 3

B reflect over the x-axis

C vertically stretch by a factor of 3

D shift left by 3

- 5 Using the mapping notation, which variable and value produce this transformation?

$$g(x) = a f(b(x - h)) + k$$

$$(x, y) \mapsto \left(\frac{x}{b} + h, ay + k\right)$$

shift right by 4

A $h = 4$ B $b = -4$ C $k = 4$ D $h = -4$



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How is the graph of f transformed to produce g ?

$$g(x) = a f(b(x-h)) + k$$

$$(x, y) \mapsto \left(\frac{x}{b} + h, ay + k\right)$$

$$g(x) = 4f(x-2)$$

A shift down by 4 and shift right by 2

B vertically stretch by a factor of 4 and reflect over the x-axis

C reflect over the x-axis and shift down by 2

D vertically stretch by a factor of 4 and shift right by 2

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Which sinusoidal function has this parameter?

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

A

$$f(x) = \cos\left(\frac{3}{7}x\right) + 1$$

B

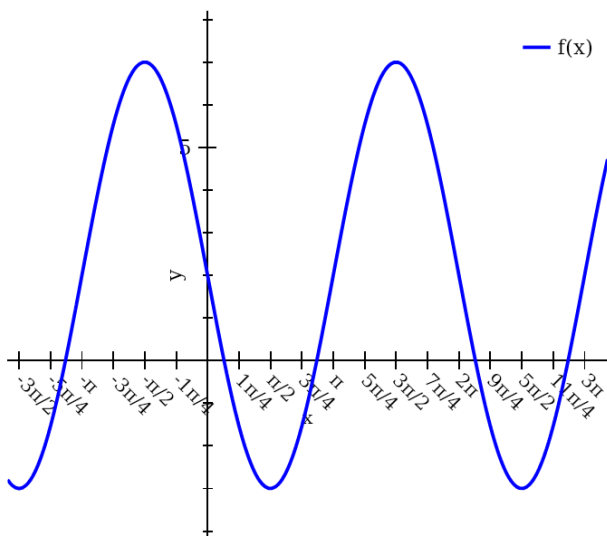
$$f(x) = \cos(x) + \frac{3}{7}$$

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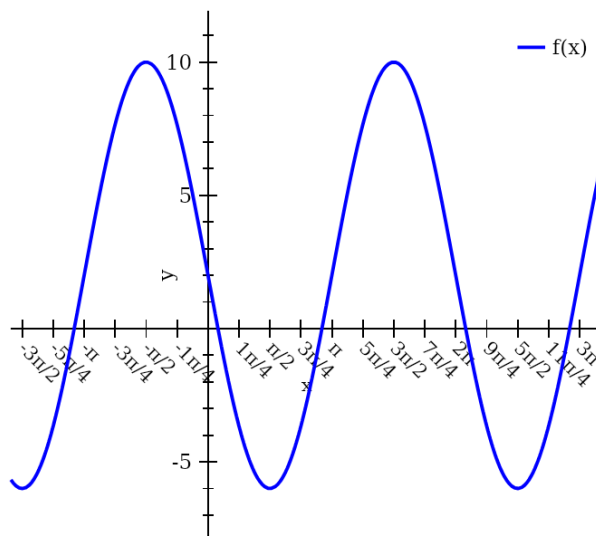
Which graph shows a sinusoidal function with this amplitude?

$$f(x) = -8\sin(x) + 2$$

A

 $y = f(x)$


B

 $y = f(x)$

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Which sinusoidal function has these parameters?

Amplitude = 4
Phase Shift = $\frac{2}{11}$ left
Vertical Shift = $\frac{5}{7}$

A

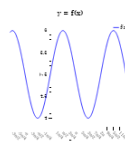
$$f(x) = -4\cos\left(x - \frac{2}{11}\right) + \frac{5}{7}$$

B

$$f(x) = -4\cos\left(x + \frac{2}{11}\right) + \frac{5}{7}$$

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Which function would have a graph with this vertical shift?



A

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

B

$$f(x) = \cos(x) - 5$$

C

$$f(x) = \cos(x) + 5$$

D

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

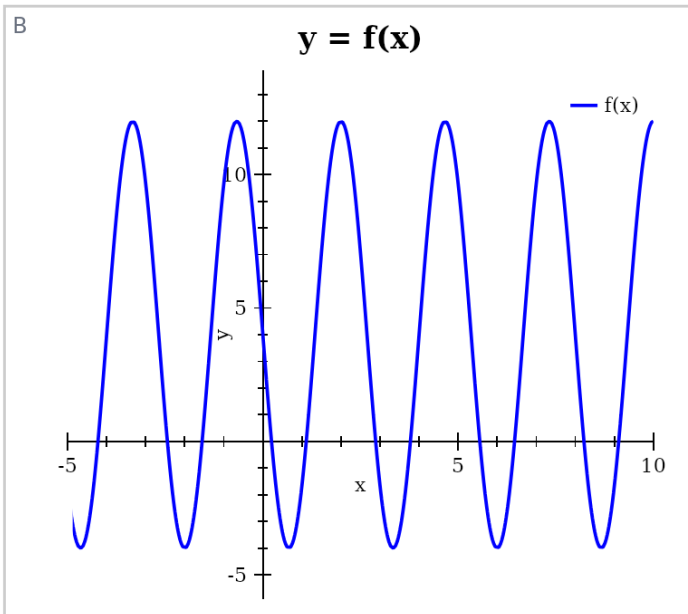
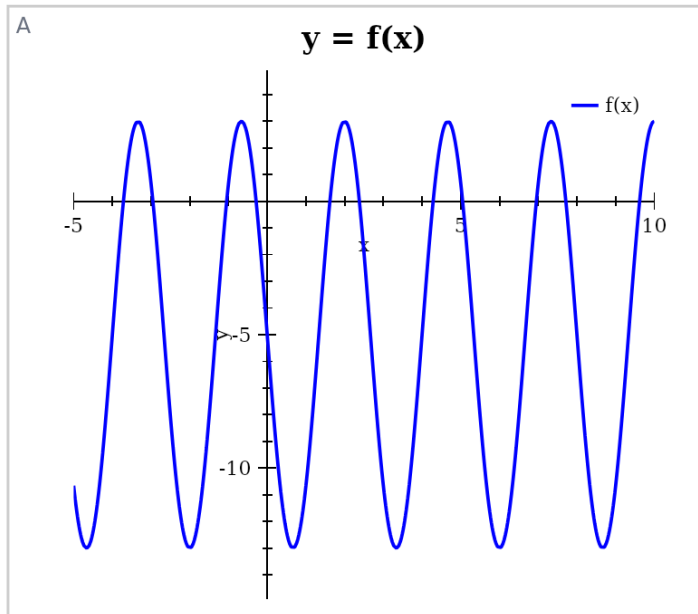


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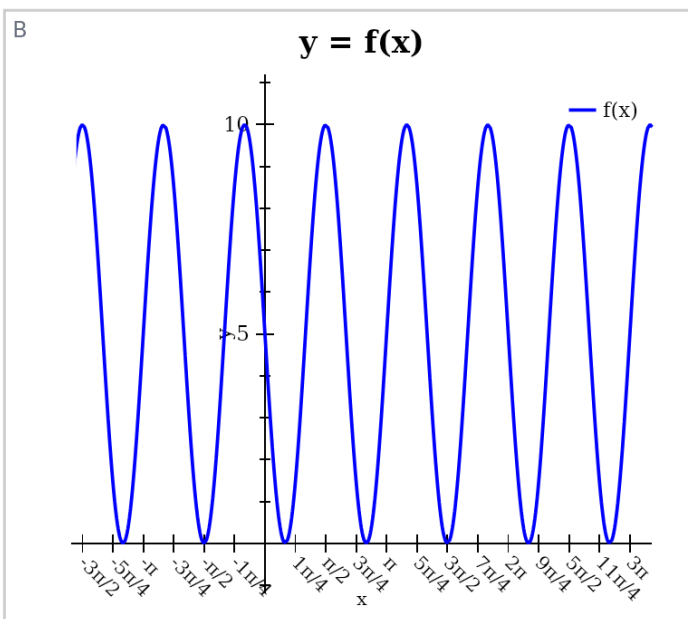
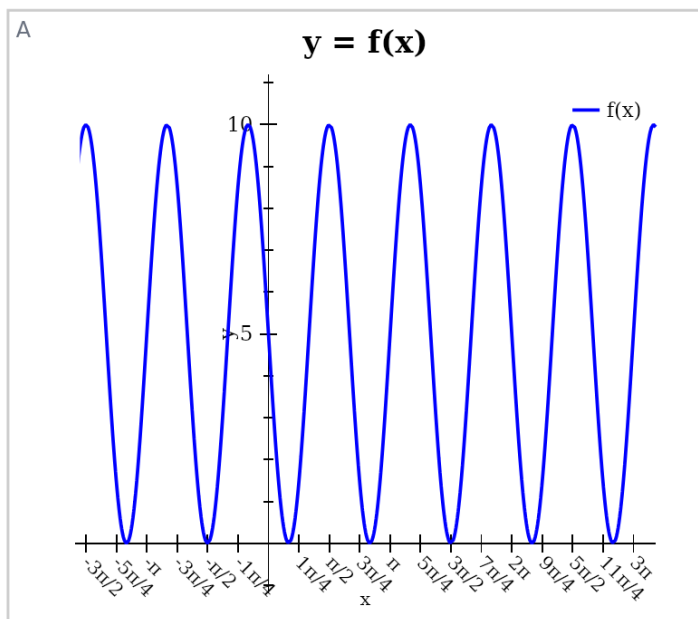
Which graph shows a sinusoidal function with this vertical shift?

$$f(x) = -8\sin\left(\frac{3}{4}\pi x\right) + 4$$

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Which graph shows a sinusoidal function with this phase shift?

$$f(x) = -5\sin(3x + 8\pi) + 5$$

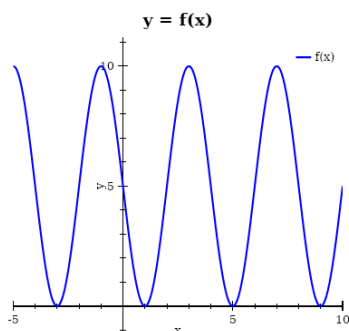




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Which function would have a graph with this period?



A

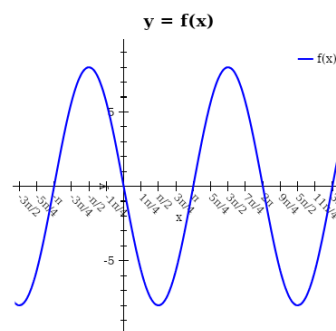
$$f(x) = -5 \sin\left(\frac{1}{2}\pi x\right) + 5$$

B

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

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Which function would have a graph with this phase shift?



A

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

B

$$f(x) = 8 \sin(x)$$

C

$$f(x) = 8 \sin(x + 5\pi)$$

D

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

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

$$f(x) = -\frac{3}{11} \sin(3x) + \frac{8}{5}$$

A

$$\text{Amplitude} = \frac{3}{11}$$

$$\text{Period} = \frac{2\pi}{3}$$

$$\text{Vertical Shift} = \frac{8}{5}$$

B

$$\text{Amplitude} = \frac{8}{5}$$

$$\text{Period} = \frac{2\pi}{3}$$

$$\text{Vertical Shift} = -\frac{3}{11}$$