



Trigonometric Functions and Identities

- 1** Solve the trigonometric equation for x in the given domain.

A

$$x = \frac{5\pi}{12}$$

B

$$x = \frac{11\pi}{12} \text{ or } x = \frac{17\pi}{12}$$

C

$$x = \frac{\pi}{12} \text{ or } x = \frac{19\pi}{12}$$

D

$$x = \frac{5\pi}{12} \text{ or } x = \frac{23\pi}{12}$$

- 2** Solve the trigonometric equation for x in the given domain.

A

$$x = \frac{5\pi}{12}$$

B

$$x = \frac{5\pi}{12} \text{ or } x = \frac{17\pi}{12}$$

C

$$x = \frac{7\pi}{12} \text{ or } x = \frac{19\pi}{12}$$

D

$$x = \frac{5\pi}{12} \text{ or } x = \frac{11\pi}{12} \text{ or } x = \frac{17\pi}{12}$$

- 3** Is this sum/difference identity correct?
 $\sin(\gamma + \alpha) = \sin^2(\gamma) - \cos(\gamma)\sin(\alpha)$

A

No

B

Yes

- 4** Simplify this expression using trig identities
 $\sin^2(\theta)(\tan^2(\theta) + 1)$

A

1

B

 $\sec^2(\theta)$

C

 $\cos^2(\theta)$

- 5** Solve for cosecant from cotangent using trig identities

A

$$\csc(\alpha) = \sqrt{122}$$

B

$$\csc(\alpha) = 3\sqrt{10}$$

**Trigonometric Functions and Identities**

6 Solve for sine from cosine using trig identities

A

$$\sin(\theta) = \frac{\sqrt{65}}{9}$$

B

$$\sin(\theta) = -\frac{\sqrt{65}}{9}$$

7 Solve for secant from tangent using trig identities

A

$$\sec(\gamma) = \sqrt{82}$$

B

$$\sec(\gamma) = -\sqrt{82}$$

8 Solve for secant from tangent using trig identities

A

$$\sec(\gamma) = \sqrt{37}$$

B

$$\sec(\gamma) = -\sqrt{37}$$



Trigonometric Functions and Identities

- 9** Solve the trigonometric equation for x in the given domain.

A $x = \frac{\pi}{3}$ or $x = \frac{5\pi}{6}$ or $x = \frac{4\pi}{3}$

B $x = \frac{2\pi}{3}$ or $x = \frac{5\pi}{3}$

C $x = \frac{\pi}{3}$

D $x = \frac{\pi}{3}$ or $x = \frac{4\pi}{3}$

- 10** Solve the trigonometric equation for x in the given domain.

A $x = \frac{\pi}{4}$

B $x = \frac{\pi}{4}$ or $x = \frac{3\pi}{4}$ or $x = \frac{5\pi}{4}$

C $x = \frac{3\pi}{4}$ or $x = \frac{7\pi}{4}$

D $x = \frac{\pi}{4}$ or $x = \frac{5\pi}{4}$

- 11** Solve the trigonometric equation for x in the given domain.

A $x = \frac{\pi}{6}$ or $x = \frac{5\pi}{6}$

B $x = \frac{\pi}{6}$

C $x = \frac{7\pi}{6}$ or $x = \frac{11\pi}{6}$

D $x = \frac{\pi}{6}$ or $x = \frac{2\pi}{3}$ or $x = \frac{5\pi}{6}$

- 12** Solve the trigonometric equation for x in the given domain.

A $x = \frac{2\pi}{3}$ or $x = \frac{5\pi}{3}$

B $x = \frac{\pi}{3}$ or $x = \frac{5\pi}{6}$ or $x = \frac{4\pi}{3}$

C $x = \frac{\pi}{3}$

D $x = \frac{\pi}{3}$ or $x = \frac{4\pi}{3}$



Trigonometric Functions and Identities

13 Which sinusoidal function has these parameters?

$$\begin{aligned} \text{Amplitude} &= 3 \\ \text{Period} &= \frac{4\pi}{3} \\ \text{Phase Shift} &= \frac{5}{2} \text{ left} \\ \text{Vertical Shift} &= \frac{6}{7} \end{aligned}$$

A $f(x) = \frac{3}{2} \sin(-3x + \frac{5}{2}) + \frac{6}{7}$

B $f(x) = -3 \sin(\frac{3}{2}x + \frac{5}{2}) + \frac{6}{7}$

14 Which sinusoidal function has these parameters?

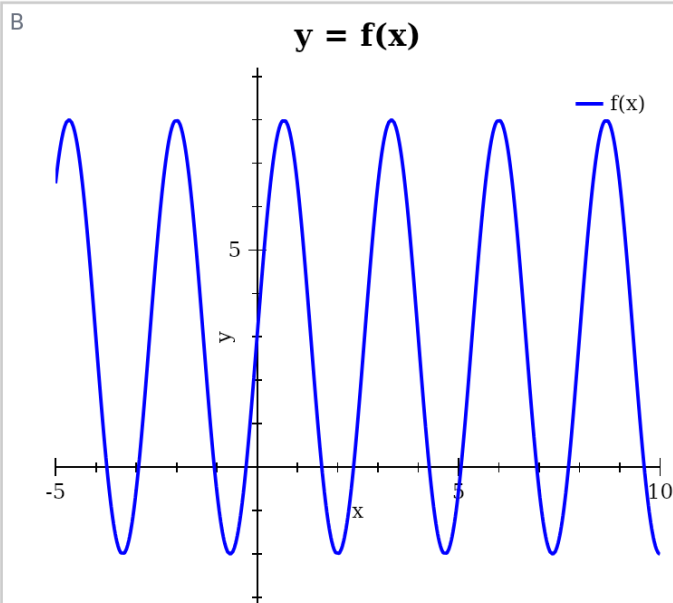
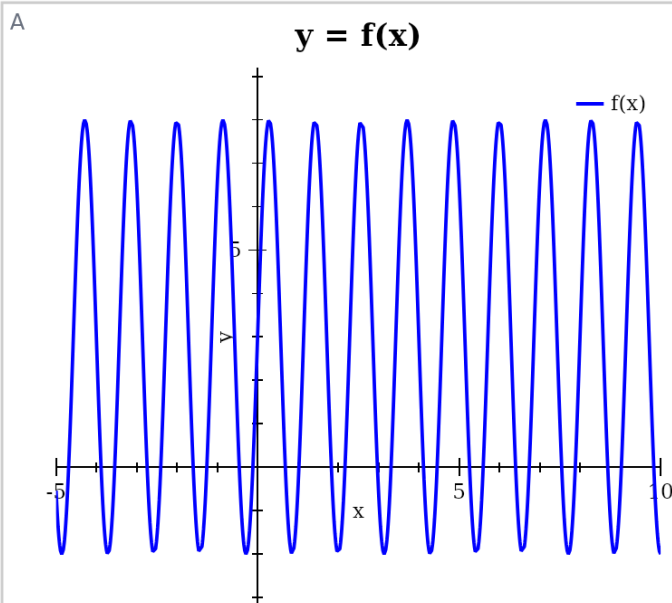
$$\begin{aligned} \text{Period} &= \frac{14}{8} \\ \text{Phase Shift} &= \frac{7}{3} \text{ left} \\ \text{Vertical Shift} &= \frac{7}{5} \end{aligned}$$

A $f(x) = \sin(\frac{7}{5}\pi x + \frac{7}{3}) + \frac{8}{7}$

B $f(x) = \sin(\frac{8}{7}\pi x + \frac{7}{3}) + \frac{7}{5}$

15 Which graph shows a sinusoidal function with this period?

$$f(x) = 5 \sin(\frac{3}{4}\pi x + 6\pi) + 3$$



16 Solve the trigonometric equation for x in the given domain.

A $x = \frac{\pi}{4}$ or $x = \frac{3\pi}{4}$ or $x = \frac{5\pi}{4}$

B $x = \frac{\pi}{4}$ or $x = \frac{3\pi}{4}$ or $x = \frac{5\pi}{4}$ or $x = \frac{7\pi}{4}$

C $x = \frac{\pi}{4}$

17 Solve the trigonometric equation for x in the given domain.

A $x = \frac{2\pi}{3}$ or $x = \pi$

B $x = 0$

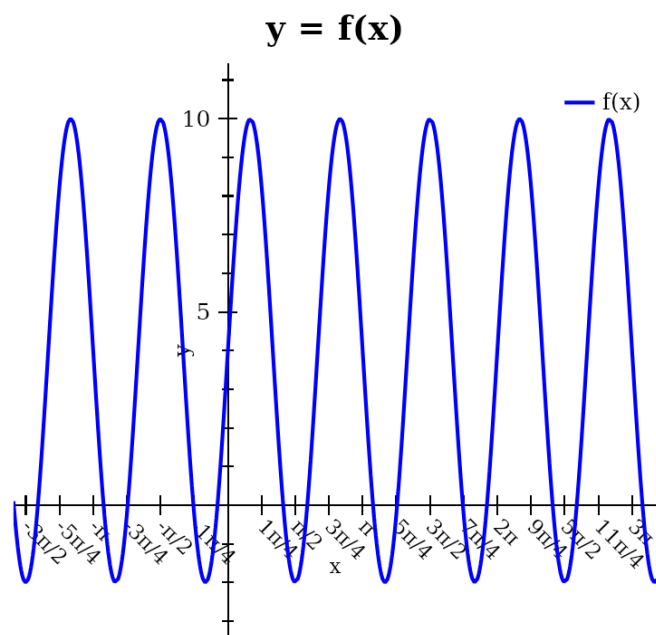
C $x = 0$ or $x = \frac{\pi}{3}$

D $x = 0$ or $x = \frac{5\pi}{3}$



Trigonometric Functions and Identities

18 Which function would have a graph with this vertical shift?



A

$$f(x) = 6 \sin(3x + 8\pi) - 4$$

B

$$f(x) = 6 \sin(3x + 8\pi) + 4$$

C

$$f(x) = 6 \sin(3x + 8\pi)$$

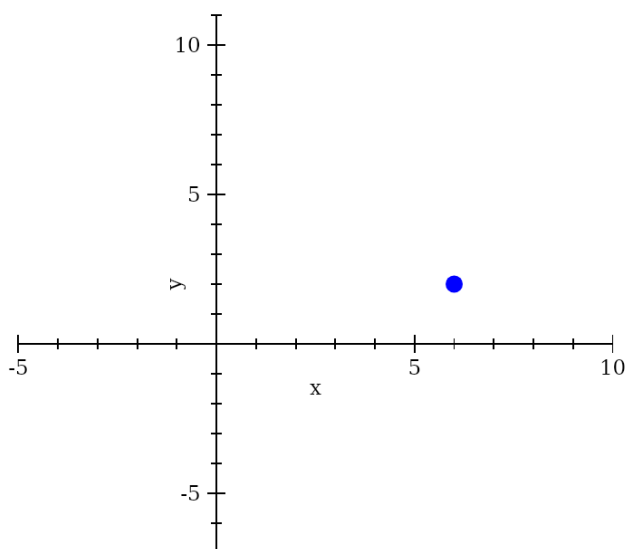
D

$$f(x) = 6 \sin(3x + 8\pi) + 2$$

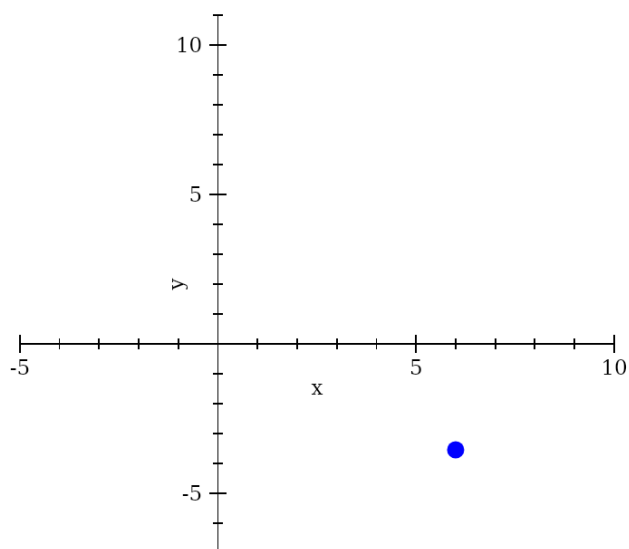
19 Which graph shows the value of this function at $x = 6$?

$$f(x) = -6 \sin\left(\frac{1}{2}\pi x + 7\pi\right) + 2$$

A

 $y = f(x)$ 

B

 $y = f(x)$ 



Trigonometric Functions and Identities

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

$$f(x) = -2\sin\left(\frac{6}{5}\pi x + \frac{4}{3}\right) + \frac{6}{7}$$

A

$$\begin{aligned}\text{Amplitude} &= 2 \\ \text{Period} &= \frac{10}{6} \\ \text{Phase Shift} &= \frac{4}{3} \text{ left} \\ \text{Vertical Shift} &= \frac{6}{7}\end{aligned}$$

B

$$\begin{aligned}\text{Amplitude} &= 2 \\ \text{Period} &= \frac{14}{6} \\ \text{Phase Shift} &= \frac{4}{3} \text{ left} \\ \text{Vertical Shift} &= \frac{6}{5}\end{aligned}$$

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

$$f(x) = \frac{8}{7}\sin\left(x + \frac{5}{11}\pi\right) + \frac{4}{7}$$

A

$$\begin{aligned}\text{Amplitude} &= \frac{8}{7} \\ \text{Phase Shift} &= \frac{4}{7}\pi \text{ left} \\ \text{Vertical Shift} &= \frac{5}{11}\end{aligned}$$

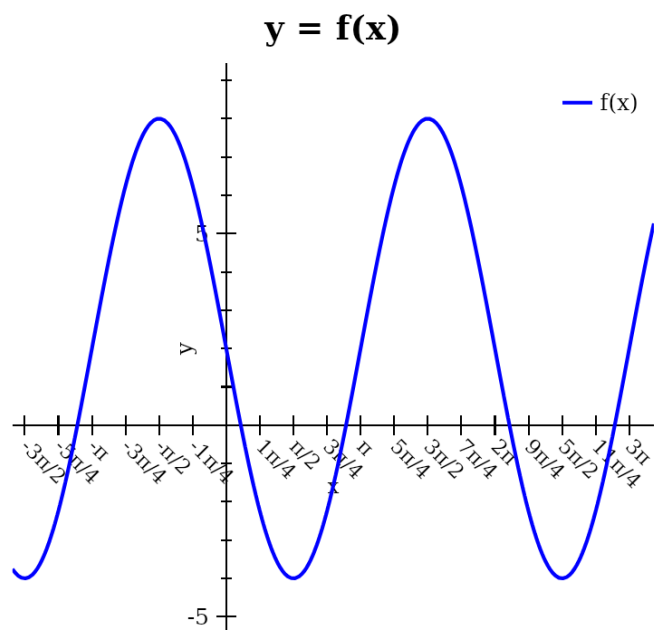
B

$$\begin{aligned}\text{Amplitude} &= \frac{8}{7} \\ \text{Phase Shift} &= \frac{5}{11}\pi \text{ left} \\ \text{Vertical Shift} &= \frac{4}{7}\end{aligned}$$



Trigonometric Functions and Identities

22 Which function would have a graph with this vertical shift?



A

$$f(x) = 6 \cos(x + 5\pi) - 3$$

B

$$f(x) = 6 \cos(x + 5\pi) + 4$$

C

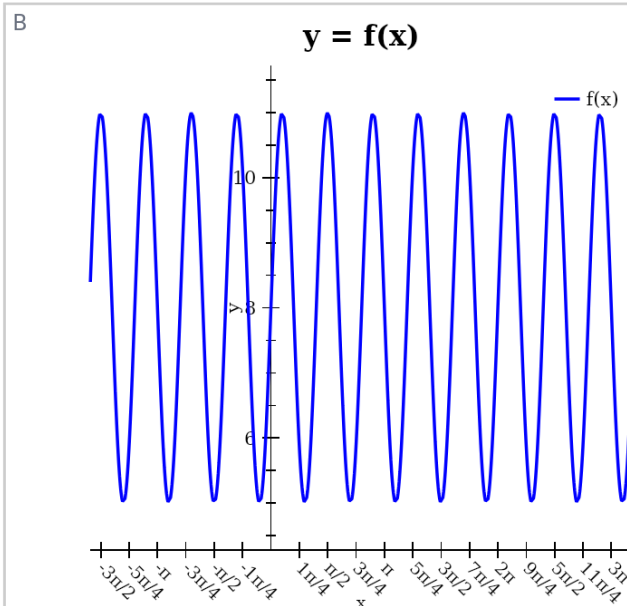
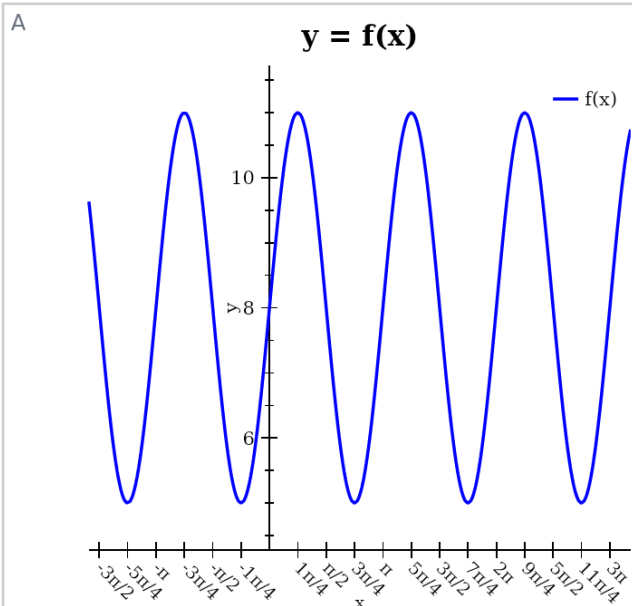
$$f(x) = 6 \cos(x + 5\pi) - 1$$

D

$$f(x) = 6 \cos(x + 5\pi) + 2$$

23 Which graph shows a sinusoidal function with this period?

$$f(x) = 3 \sin(2x) + 8$$





Trigonometric Functions and Identities

24 Solve the trigonometric equation for x in the given domain.

A

$$x = \frac{2\pi}{3} \text{ or } x = \frac{4\pi}{3}$$

B

$$x = \frac{\pi}{3} \text{ or } x = \frac{5\pi}{3}$$

C

$$x = \frac{2\pi}{3}$$

D

$$x = \frac{2\pi}{3} \text{ or } x = \frac{7\pi}{6} \text{ or } x = \frac{4\pi}{3}$$

25 Solve the trigonometric equation for x in the given domain.

A

$$x = 0 \text{ or } x = \frac{2\pi}{3}$$

B

$$x = \frac{\pi}{3} \text{ or } x = \pi$$

C

$$x = \pi$$

D

$$x = \pi \text{ or } x = \frac{5\pi}{3}$$

26 Solve the trigonometric equation for x in the given domain.

A

$$x = 0 \text{ or } x = \pi$$

B

$$x = 0 \text{ or } x = \frac{\pi}{2} \text{ or } x = \pi$$

C

$$x = 0$$

28 Solve the trigonometric equation for x in the given domain.

A

$$x = \frac{\pi}{4} \text{ or } x = \frac{3\pi}{4} \text{ or } x = \frac{5\pi}{4} \text{ or } x = \frac{7\pi}{4}$$

B

$$x = \frac{\pi}{4}$$

C

$$x = \frac{\pi}{4} \text{ or } x = \frac{3\pi}{4} \text{ or } x = \frac{5\pi}{4}$$

27 Solve the trigonometric equation for x in the given domain.

A

$$x = \frac{2\pi}{3}$$

B

$$x = \frac{\pi}{3} \text{ or } x = \frac{4\pi}{3}$$

C

$$x = \frac{2\pi}{3} \text{ or } x = \frac{7\pi}{6} \text{ or } x = \frac{5\pi}{3}$$

D

$$x = \frac{2\pi}{3} \text{ or } x = \frac{5\pi}{3}$$

**Trigonometric Functions and Identities**

29 Solve the trigonometric equation for x in the given domain.

A

$$x = \frac{\pi}{4}$$

B

$$x = \frac{\pi}{4} \text{ or } x = \frac{5\pi}{4}$$

C

$$x = \frac{3\pi}{4} \text{ or } x = \frac{7\pi}{4}$$

D

$$x = \frac{\pi}{4} \text{ or } x = \frac{3\pi}{4} \text{ or } x = \frac{5\pi}{4}$$

30 Solve the trigonometric equation for x in the given domain.

A

$$x = \frac{\pi}{6} \text{ or } x = \frac{2\pi}{3} \text{ or } x = \frac{7\pi}{6}$$

B

$$x = \frac{\pi}{6}$$

C

$$x = \frac{\pi}{3} \text{ or } x = \frac{5\pi}{6} \text{ or } x = \frac{4\pi}{3} \text{ or } x = \frac{11\pi}{6}$$

D

$$x = \frac{\pi}{6} \text{ or } x = \frac{2\pi}{3} \text{ or } x = \frac{7\pi}{6} \text{ or } x = \frac{5\pi}{3}$$

31 Solve the trigonometric equation for x in the given domain.

A

$$x = \frac{\pi}{6} \text{ or } x = \frac{5\pi}{6} \text{ or } x = \frac{7\pi}{6} \text{ or } x = \frac{11\pi}{6}$$

B

$$x = \frac{\pi}{6} \text{ or } x = \frac{2\pi}{3} \text{ or } x = \frac{5\pi}{6} \text{ or } x = \frac{7\pi}{6} \text{ or } x = \frac{11\pi}{6}$$

C

$$x = \frac{\pi}{6}$$

D

$$x = \frac{\pi}{6} \text{ or } x = \frac{5\pi}{6} \text{ or } x = \frac{7\pi}{6}$$



Trigonometric Functions and Identities

32 Is this pythagorean trig identity correct?

$$\cos^2(150^\circ) = \frac{\sin^2(150^\circ)}{\tan^2(150^\circ)}$$

A

No

B

Yes

33 Is this pythagorean trig identity correct?

$$\csc^2\left(\frac{4\pi}{3}\right) = \cot^2\left(\frac{4\pi}{3}\right) + 1$$

A

No

B

Yes

34 Is this pythagorean trig identity correct?

$$\tan^2(45^\circ) = 1 - \sec^2(45^\circ)$$

A

Yes

B

No

35 Is this pythagorean trig identity correct?

$$\cos^2\left(\frac{\pi}{6}\right) = \frac{\sin^2\left(\frac{\pi}{6}\right)}{\tan^2\left(\frac{\pi}{6}\right)}$$

A

Yes

B

No

36 Is this pythagorean trig identity correct?

$$\sin^2\left(\frac{4\pi}{3}\right) = 1 - \cos^2\left(\frac{4\pi}{3}\right)$$

A

Yes

B

No

37 Is this pythagorean trig identity correct?

$$\cos^2(120^\circ) = 1 - \sin^2(120^\circ)$$

A

Yes

B

No

38 Is this pythagorean trig identity correct?

$$\sec^2\left(\frac{11\pi}{6}\right) = \tan^2\left(\frac{11\pi}{6}\right) + 1$$

A

Yes

B

No

39 Is this pythagorean trig identity correct?

$$\cot^2(\theta) = \csc^2(\theta) - 1$$

A

Yes

B

No