

Trigonometric Functions

1 How many radians is this angle ($180^\circ = \pi$ radians)?

120°

A

$$\frac{2\pi}{3} \text{ rad}$$

B

$$\pi \text{ rad}$$

2 How many radians is this angle ($180^\circ = \pi$ radians)?

$$\frac{3\pi}{4} \text{ rad}$$

A 60°

B

B 135°

3 Convert the given angle in degrees to radians

135°

A

$$\frac{3\pi}{6} \text{ rad}$$

B

$$\frac{4\pi}{4} \text{ rad}$$

C

$$\frac{5\pi}{4} \text{ rad}$$

D

$$\frac{2\pi}{4} \text{ rad}$$

E

$$\frac{3\pi}{4} \text{ rad}$$

F

$$\frac{3\pi}{3} \text{ rad}$$

4 Which sinusoidal function has these parameters?

Amplitude = 2
Period = $\frac{22}{5}$
Phase Shift = $\frac{8}{5}$ Left
Vertical Shift = $\frac{2}{5}$

A

$$f(x) = 2 \cos\left(\frac{8}{11}\pi x - \frac{6}{5}\right) + \frac{2}{5}$$

B

$$f(x) = 2 \cos\left(\frac{8}{11}\pi x + \frac{6}{5}\right) + \frac{2}{5}$$

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

$$f(x) = 3 \cos(x) + \frac{8}{11}$$

A

$$\begin{aligned} \text{Amplitude} &= \frac{8}{11} \\ \text{Vertical Shift} &= 3 \end{aligned}$$

B

$$\begin{aligned} \text{Amplitude} &= 3 \\ \text{Vertical Shift} &= \frac{8}{11} \end{aligned}$$

6 What are the coordinates of the point on the unit circle at $7\pi/4$ radians?

$$\frac{7\pi}{4} \text{ radians}$$

A

$$\left(\cos\left(\frac{7\pi}{4}\right), \sin\left(\frac{7\pi}{4}\right)\right)$$

B

$$\left(\sin\left(\frac{7\pi}{4}\right), \cos\left(\frac{7\pi}{4}\right)\right)$$

7 What are the coordinates of the point on the unit circle at 135° ?

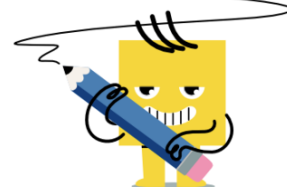
135°

A

$$(\sin(135^\circ), \cos(135^\circ))$$

B

$$(\cos(135^\circ), \sin(135^\circ))$$



Trigonometric Functions

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

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

A

$$\text{Amplitude} = \frac{8}{7}$$

$$\text{Period} = \frac{10}{6}$$

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

B

$$\text{Amplitude} = \frac{6}{5}$$

$$\text{Period} = \frac{14}{8}$$

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

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

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

A

$$\text{Amplitude} = \frac{3}{5}$$

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

$$\text{Phase Shift} = \frac{3}{11}\pi \text{ left}$$

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

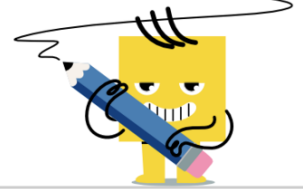
B

$$\text{Amplitude} = \frac{3}{5}$$

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

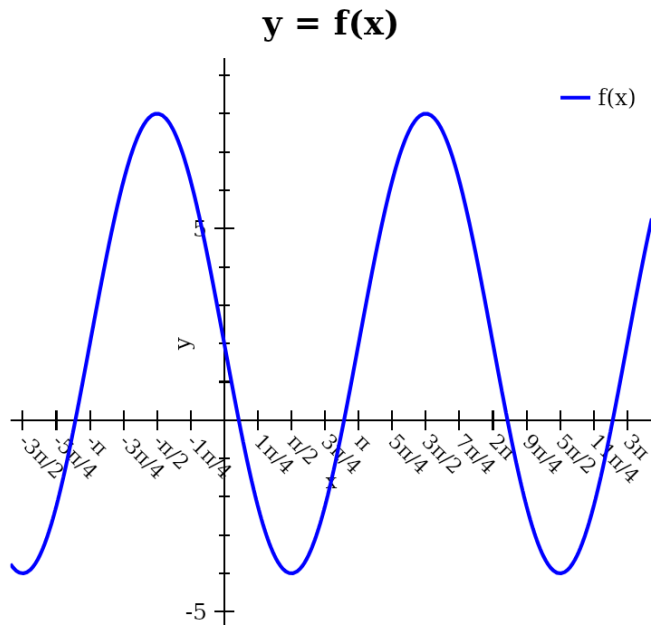
$$\text{Phase Shift} = \frac{5}{2}\pi \text{ left}$$

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



Trigonometric Functions

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



A

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

B

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

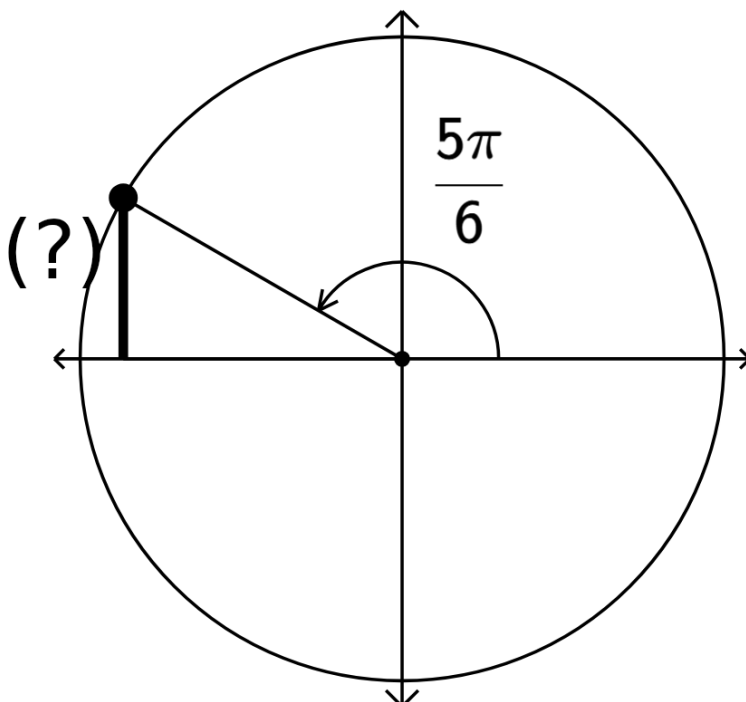
C

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

D

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

11 What is the Y dimension for the unit circle point at $5\pi/6$ radians?

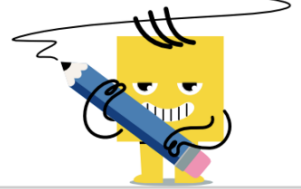


A

$$-\frac{\sqrt{2}}{2}$$

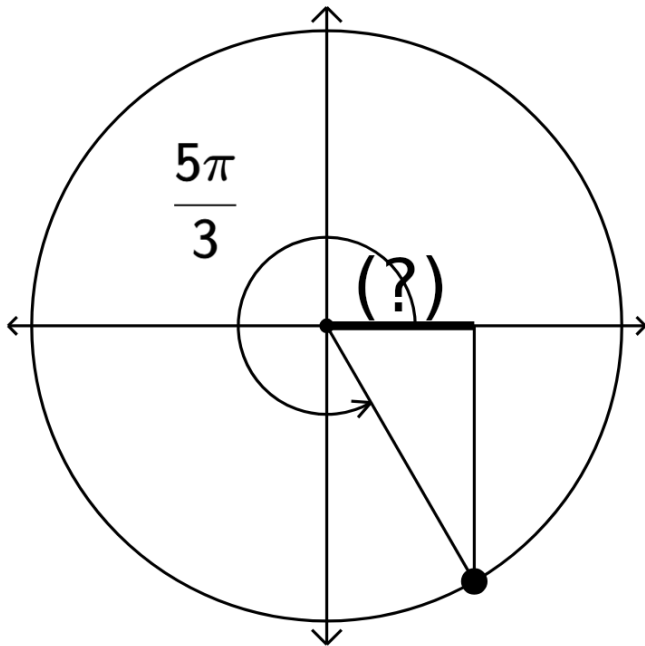
B

$$\frac{1}{2}$$



Trigonometric Functions

12 What calculation gives the X dimension for the unit circle point at $5\pi/3$ radians?



A

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

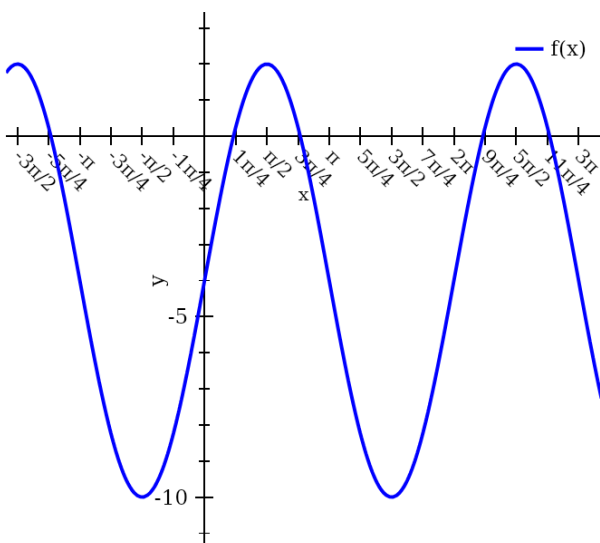
B

$$\cos\left(\frac{5\pi}{3}\right) = \frac{1}{2}$$

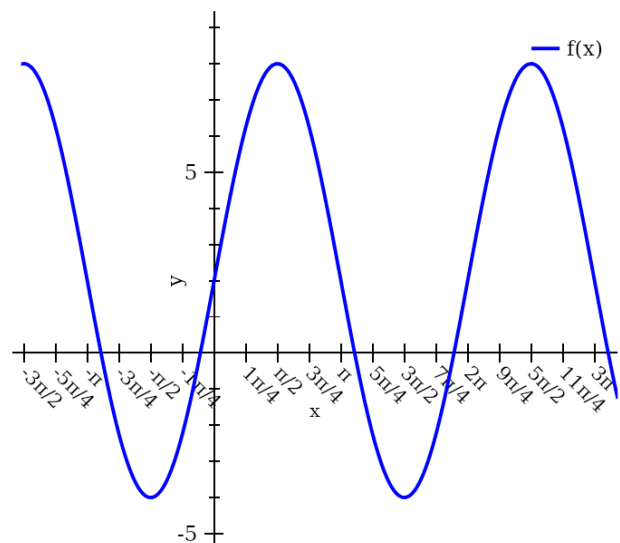
13 Which graph shows a sinusoidal function with this vertical shift?

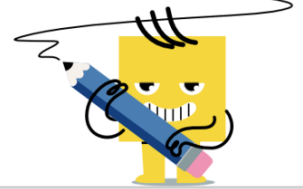
$$f(x) = 6\sin(x + 8\pi) + 2$$

A

 $y = f(x)$ 

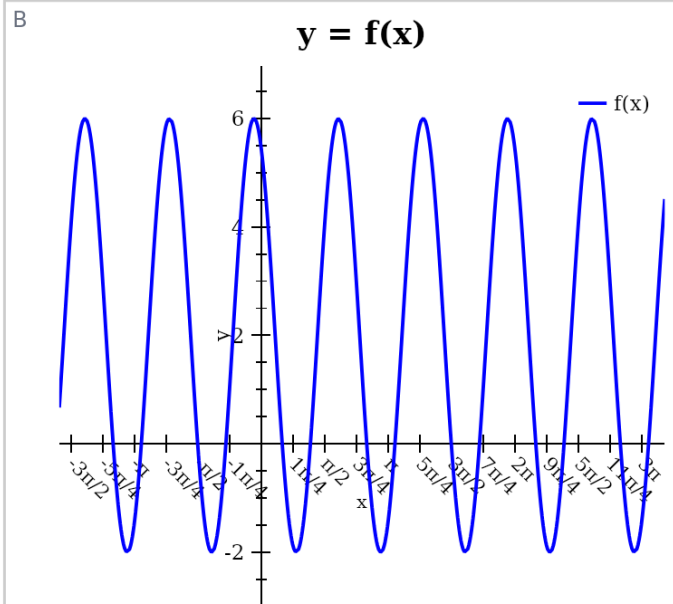
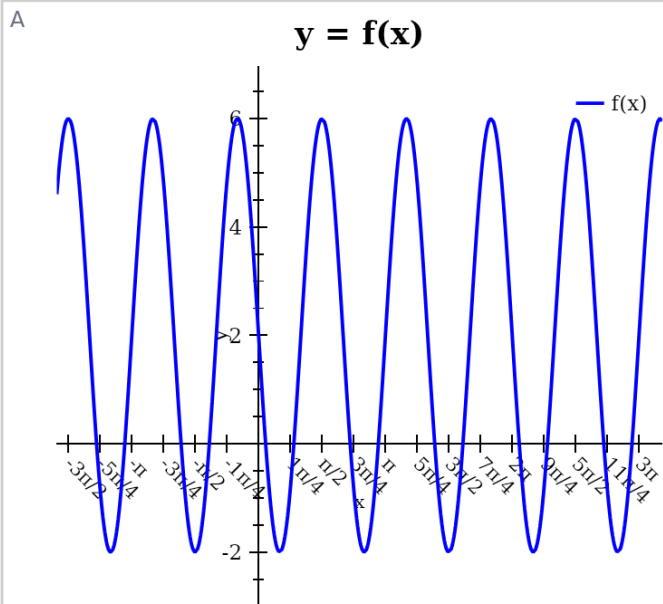
B

 $y = f(x)$ 

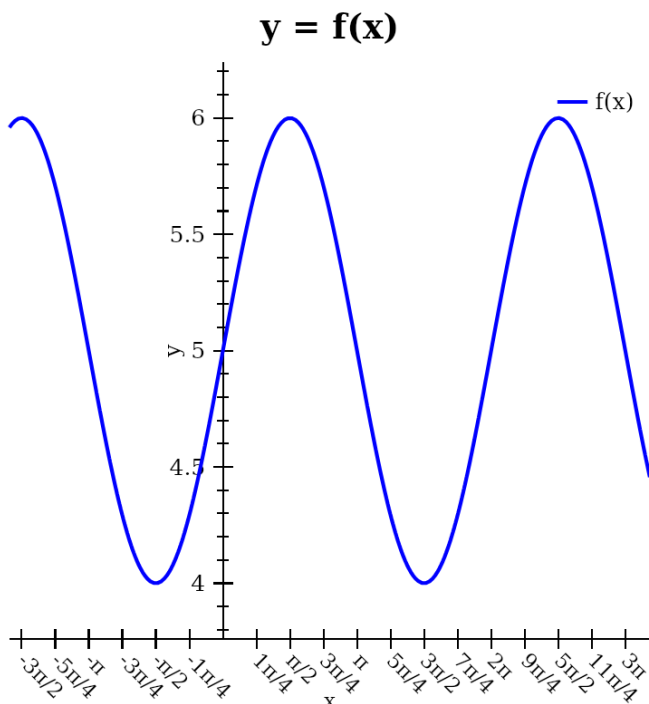


Trigonometric Functions

- 14** Which graph shows a sinusoidal function with this phase shift?
 $f(x) = -4\sin(3x + 8\pi) + 2$



- 15** Which function would have a graph with this vertical shift?



A

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

B

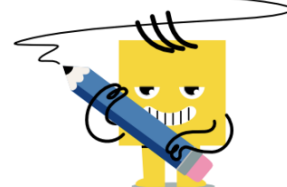
$$f(x) = \cos(x) - 5$$

C

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

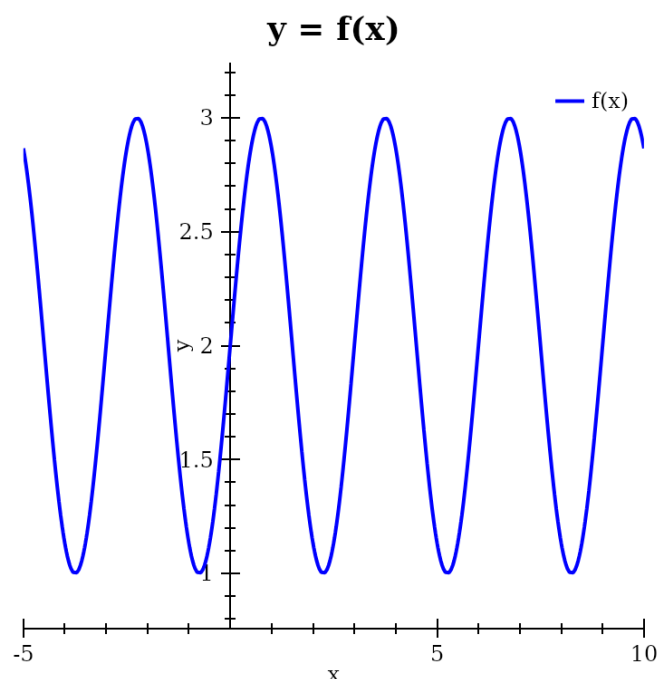
D

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



Trigonometric Functions

16 Which function would have a graph with this period?



A

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

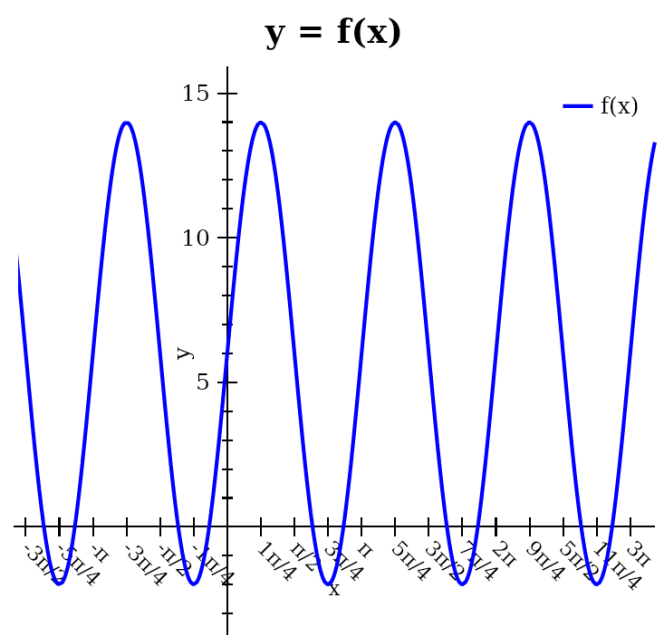
B

$$f(x) = \cos\left(\frac{4}{3}\pi x\right) + 2$$

C

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

17 Which function would have a graph with this period?



A

$$f(x) = -8\cos(4x + 5\pi) + 6$$

B

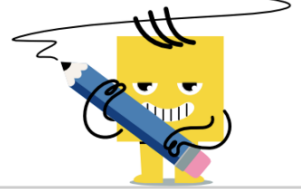
$$f(x) = -8\cos(6x + 5\pi) + 6$$

C

$$f(x) = -8\cos(5x + 5\pi) + 6$$

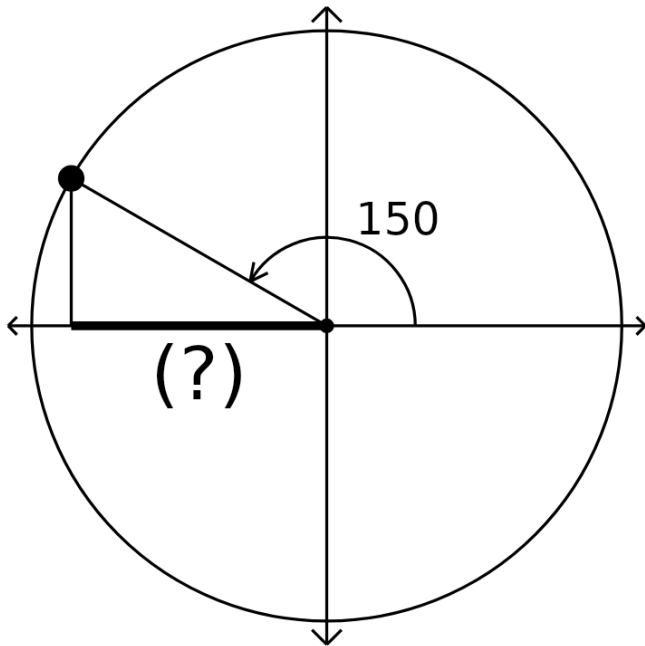
D

$$f(x) = -8\cos(2x + 5\pi) + 6$$



Trigonometric Functions

18 What calculation gives the X dimension for the unit circle point at 150° ?



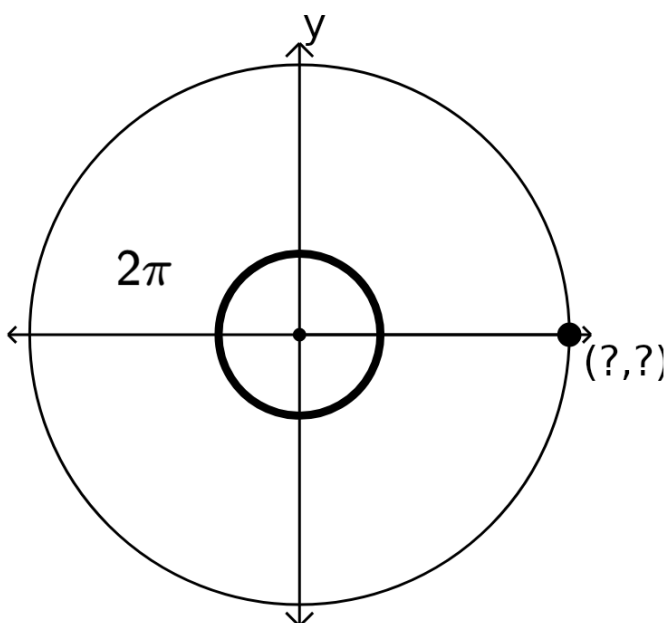
A

$$\sin(150^\circ) = -\frac{\sqrt{2}}{2}$$

B

$$\cos(150^\circ) = -\frac{\sqrt{3}}{2}$$

19 What are the coordinates of the unit circle point at 2π radians?

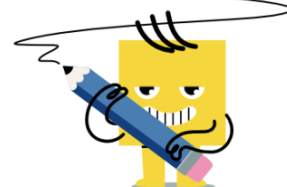


A

$$(1, 0)$$

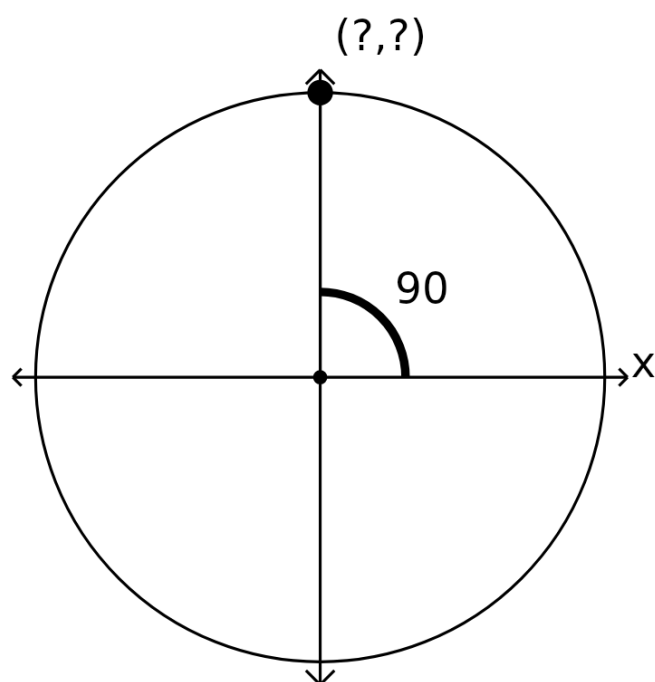
B

$$(-1, 0)$$



Trigonometric Functions

20 What are the coordinates of the unit circle point at 90°



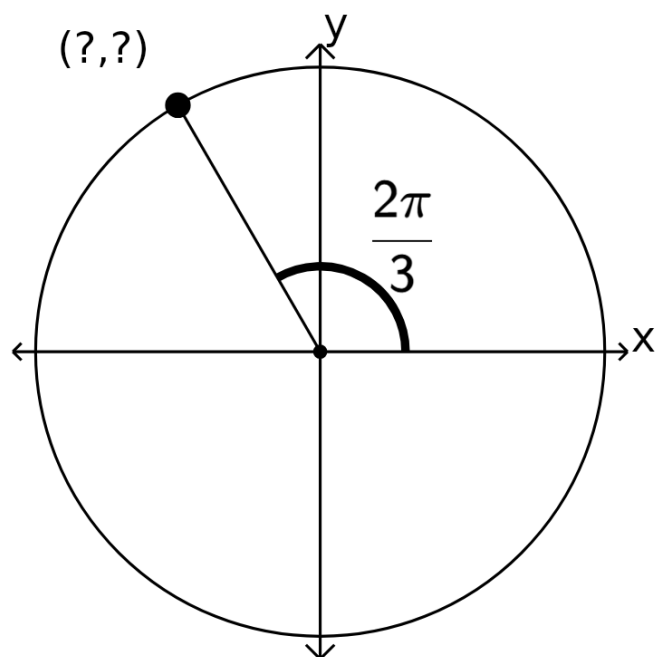
A

 $(0, 1)$

B

 $(-1, 0)$

21 What are the coordinates of the unit circle point at $2\pi/3$ radians



A

 $(-\frac{1}{2}, \frac{\sqrt{3}}{2})$

B

 $(-\frac{\sqrt{2}}{2}, \frac{\sqrt{2}}{2})$