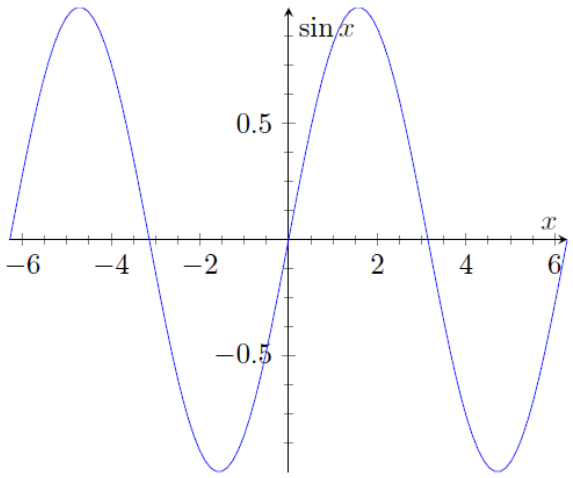
Characteristics of Sine and Cosine Graphs

Learning Objectives

- Graph the sine function and understand its properties
- Graph the cosine function and understand its properties

Graph the sine function and understand its properties

1. A graph of the function $f(x) = \sin(x)$ is shown below. Use it, and properties of the sine function to answer the questions that follow.



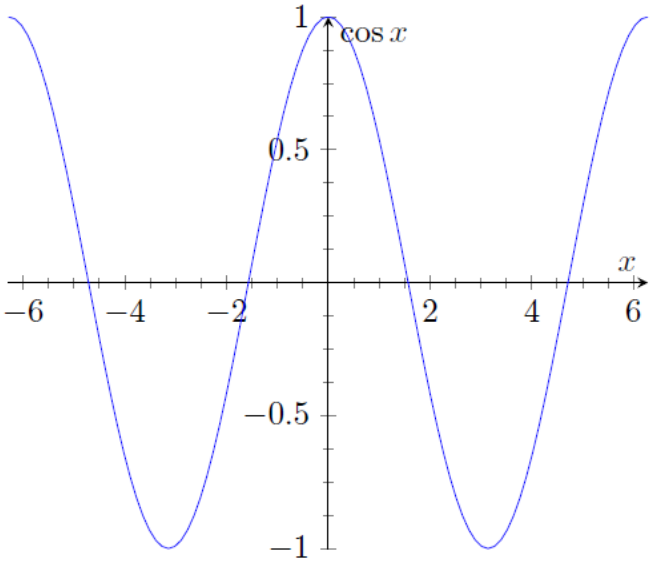
   a. The value of $\sin(a) = 0.1574$. What is the value of $\sin(-a)$?

   b. Give one value on the interval $[0,2\pi)$ where $\sin(x)$ is a maximum?

c. On what interval on $-2\pi \leq x < 0$ is $\sin(x)$ decreasing?

Graph the cosine function and understand its properties

2. A graph of the function $g(x) = \cos(x)$ is shown below. Use it, and properties of the cosine function to answer the questions that follow.



a. The value of $\cos(a) = -0.2396$. What is the value of $\cos(-a)$?

b. Give one value on the interval $[-2\pi, 0)$ where $\cos(x)$ is a minimum?

c. On what interval on $0 \leq x < 2\pi$ is $\cos(x)$ increasing?

- $\sin(-x) = -\sin(x)$
- $\cos(-x) = \cos(x)$

ANSWER KEY

1. a. -0.1574; b. $\frac{\pi}{2}$; c. $\left(-\frac{3\pi}{2}, -\frac{\pi}{2}\right)$
2. a. $= 0.2396$; b. $-\pi$; c. $(\pi, 2\pi)$