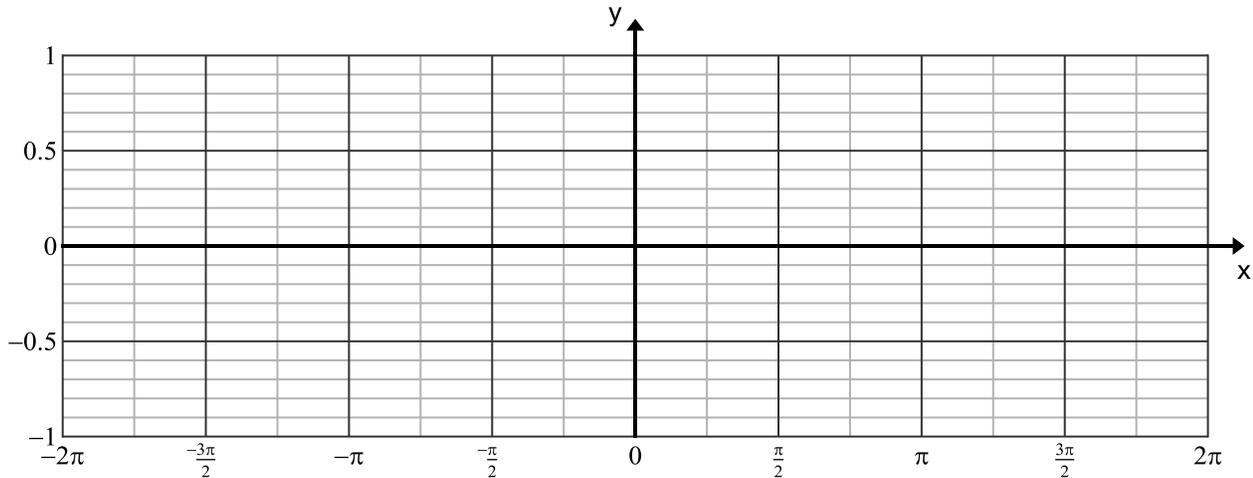


You should complete the graphs **without** the aid of a graphing calculator.

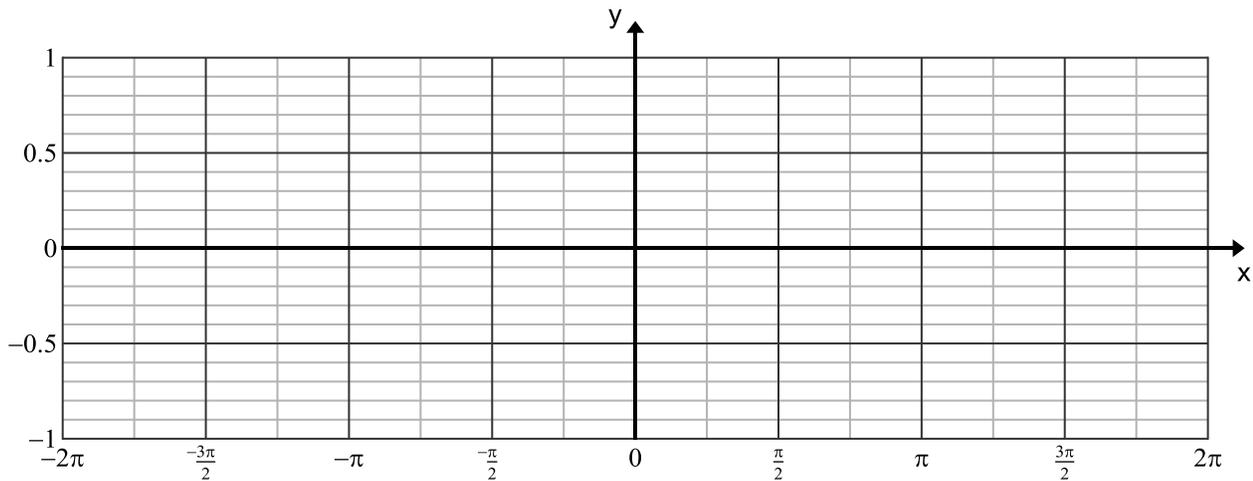
1. Sketch a graph of  $y = \sin(x)$ . Note that the angle measure,  $x$ , is measured in radian.



Use your graph to answer the following questions about the sine function.

- a) What is the domain of the sine function? \_\_\_\_\_
- b) What is the range of the sine function? \_\_\_\_\_
- c) Where are the x-intercepts located? \_\_\_\_\_
- d) Where is the y-intercept? \_\_\_\_\_
- e) What is the maximum value of the graph? \_\_\_\_\_ Where do the maximums occur? \_\_\_\_\_
- f) What is the minimum value of the graph? \_\_\_\_\_ Where do the minimums occur? \_\_\_\_\_

2. Sketch a graph of  $y = \cos(x)$ . Note that the angle measure,  $x$ , is measured in radian.



Use your graph to answer the following questions about the cosine function.

- a) What is the domain of the cosine function? \_\_\_\_\_
- b) What is the range of the cosine function? \_\_\_\_\_
- c) Where are the x-intercepts located? \_\_\_\_\_
- d) Where is the y-intercept? \_\_\_\_\_
- e) What is the maximum value of the graph? \_\_\_\_\_ Where do the maximums occur? \_\_\_\_\_
- f) What is the minimum value of the graph? \_\_\_\_\_ Where do the minimums occur? \_\_\_\_\_

3. We sometimes refer to the point on the graph where  $x = 0$  as the “starting point” of the graph. What is the starting point of the cosine graph? \_\_\_\_\_ Of the sine graph? \_\_\_\_\_

4. Tell whether each statement below describes a characteristic of the sine function, the cosine function, both functions, or neither function:

- a) The function passes through  $(0, 0)$
- b) The function is increasing on the interval  $0 \leq x \leq \frac{\pi}{2}$
- c) The period of the function is  $\pi$
- d) The function is symmetric with respect to the x-axis
- e) The function is symmetric with respect to the y-axis
- f) The x-intercepts occur at multiples of  $\pi$
- g) The x-intercepts occur at multiples of  $\frac{\pi}{2}$
- h) The range of the function is  $0 \leq y \leq 1$
- i) The maximum values of the function occur when the x values are multiples of  $2\pi$
- j) The minimum value of the function is  $-1$
- k) The function decreases on the interval  $0 \leq x \leq \pi$

5. Graph  $y = \sin x$  and  $y = \cos x$  using a graphing calculator with a window that shows  $-2\pi \leq x \leq 2\pi$ .

a) Use your calculator to find all values  $x$  for which  $\sin x = 0.8$

b) Use your calculator to find all values  $x$  for which  $\cos x = -0.6$

c) Are there values  $x$  for which  $\sin x = \cos x$ ? If so, state them for  $-2\pi \leq x \leq 2\pi$