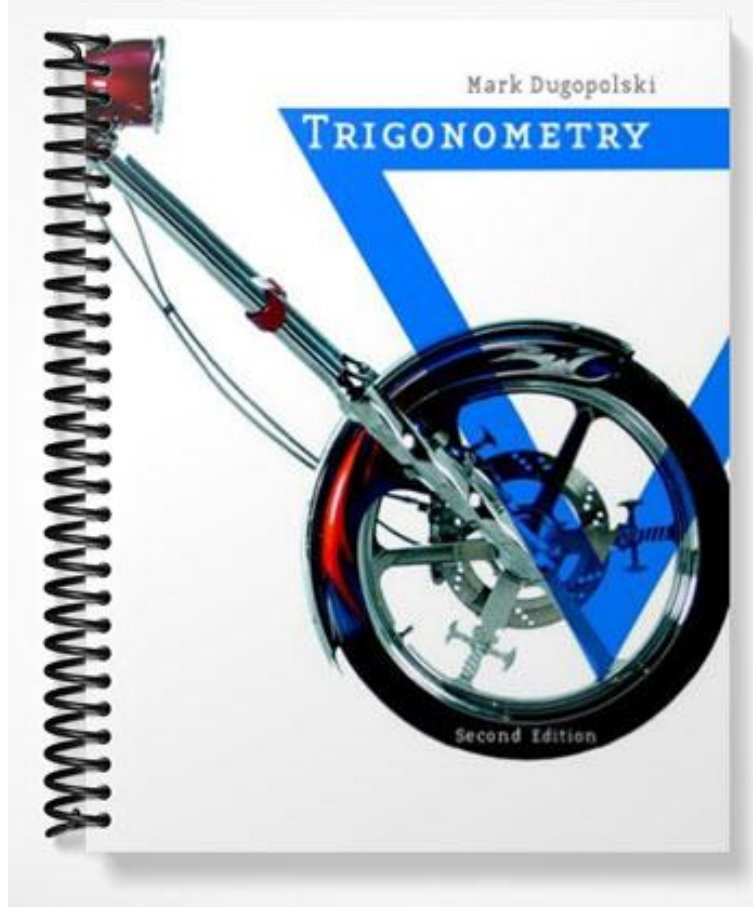


# TEST BANK



Name: \_\_\_\_\_

Sketch at least one cycle of the graph of each function. Draw and label the axes appropriately. Determine the period, range, and amplitude for each function.

1.  $y = \sin\left(x - \frac{\pi}{4}\right)$

period: \_\_\_\_\_  
range: \_\_\_\_\_  
amplitude: \_\_\_\_\_

2.  $y = \cos(2x)$

period: \_\_\_\_\_  
range: \_\_\_\_\_  
amplitude: \_\_\_\_\_

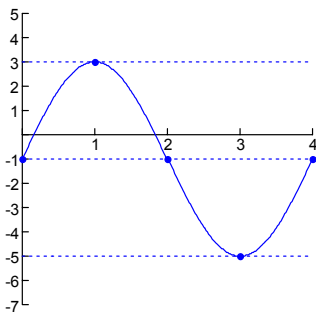
3.  $y = -2\sin(x)$

period: \_\_\_\_\_  
range: \_\_\_\_\_  
amplitude: \_\_\_\_\_

4.  $y = \cos(x) + 1$

period: \_\_\_\_\_  
range: \_\_\_\_\_  
amplitude: \_\_\_\_\_

5. Determine the amplitude and period for the sine curve in the accompanying graph. Write its equation in the form  $y = A \sin(B[x - C]) + D$ .



period: \_\_\_\_\_ amplitude: \_\_\_\_\_

equation: \_\_\_\_\_

Sketch at least one cycle of the graph of each function. Draw and label the axes appropriately. Determine the period, asymptotes, and range for each function.

6.  $y = \tan(x - \pi)$

period: \_\_\_\_\_

asymptotes: \_\_\_\_\_

range: \_\_\_\_\_

7.  $y = -\sec(x) + \pi$

period: \_\_\_\_\_

asymptotes: \_\_\_\_\_

range: \_\_\_\_\_

8.  $y = \csc(3x)$

period: \_\_\_\_\_

asymptotes: \_\_\_\_\_

range: \_\_\_\_\_

**Solve each problem.**

9. Graph the function  $y = \sin x - \cos x$  for  $x$  between  $-2\pi$  and  $2\pi$  using the technique of adding the  $y$ -coordinates. Draw and label the axes appropriately.

10. The population in a particular herd of antelope in South Africa oscillates between approximately 500 and 800. The maximum number can be found at the beginning of January, while the minimum number can be found at the beginning of July. Express the population as a function of time in the form  $y = A \sin[B(x - C)] + D$ , where January is counted as month one ( $x = 1$ ).

10. \_\_\_\_\_

Name: \_\_\_\_\_

Sketch at least one cycle of the graph of each function. Draw and label the axes appropriately. Determine the period, range, and amplitude for each function, as required.

1.  $y = \sin\left(x + \frac{\pi}{2}\right)$

period: \_\_\_\_\_  
range: \_\_\_\_\_  
amplitude: \_\_\_\_\_

2.  $y = \cos(4x)$

period: \_\_\_\_\_  
range: \_\_\_\_\_  
amplitude: \_\_\_\_\_

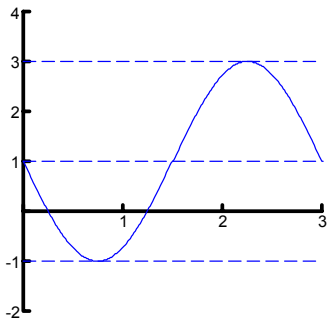
3.  $y = -3\sin(x)$

period: \_\_\_\_\_  
range: \_\_\_\_\_  
amplitude: \_\_\_\_\_

4.  $y = \sin(x) - 2$

period: \_\_\_\_\_  
range: \_\_\_\_\_  
amplitude: \_\_\_\_\_

5. Determine the amplitude and period for the sine curve in the accompanying graph. Write its equation in the form  $y = A \sin(B[x - C]) + D$ .



period: \_\_\_\_\_ amplitude: \_\_\_\_\_

equation: \_\_\_\_\_

Sketch at least one cycle of the graph of each function. Draw and label the axes appropriately. Determine the period, asymptotes, and range for each function.

6.  $y = 3 \csc (2x)$

period: \_\_\_\_\_

asymptotes: \_\_\_\_\_

range: \_\_\_\_\_

7.  $y = \frac{1}{3} \sec (x) + 1$

period: \_\_\_\_\_

asymptotes: \_\_\_\_\_

range: \_\_\_\_\_

8.  $y = \tan \left(x - \frac{\pi}{4}\right)$

period: \_\_\_\_\_

asymptotes: \_\_\_\_\_

range: \_\_\_\_\_

**Solve each problem.**

9. Graph the function  $y = \sin x + \cos x$  for  $x$  between  $-2\pi$  and  $2\pi$  using the technique of adding the  $y$ -coordinates. Draw and label the axes appropriately.

10. The population in a particular herd of antelope in South Africa oscillates between approximately 400 and 900. The maximum number can be found at the beginning of February, while the minimum number of can be found at the beginning of August. Express the population as a function of time in the form  $y = A \sin[B(x - C)] + D$ , where January is counted as month one ( $x = 1$ ).

Name: \_\_\_\_\_

Sketch at least one cycle of the graph of each function. Draw and label the axes appropriately. Determine the period, range, and amplitude for each function, as required.

1.  $y = \sin\left(x - \frac{\pi}{3}\right)$

period: \_\_\_\_\_  
range: \_\_\_\_\_  
amplitude: \_\_\_\_\_

2.  $y = \cos\left(\frac{1}{2}x\right)$

period: \_\_\_\_\_  
range: \_\_\_\_\_  
amplitude: \_\_\_\_\_

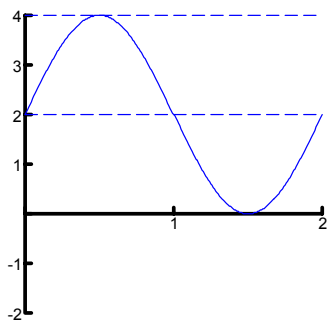
3.  $y = -2\cos(x)$

period: \_\_\_\_\_  
range: \_\_\_\_\_  
amplitude: \_\_\_\_\_

4.  $y = \sin(x) + 1$

period: \_\_\_\_\_  
range: \_\_\_\_\_  
amplitude: \_\_\_\_\_

5. Determine the amplitude and period for the sine curve in the accompanying graph. Write its equation in the form  $y = A \sin(B[x - C]) + D$ .



period: \_\_\_\_\_ amplitude: \_\_\_\_\_

equation: \_\_\_\_\_

Sketch at least one cycle of the graph of each function. Draw and label the axes appropriately. Determine the period, asymptotes, and range for each function.

6.  $y = 2 \sec(x) + 1$

period: \_\_\_\_\_

asymptotes: \_\_\_\_\_

range: \_\_\_\_\_

7.  $y = \tan\left(\frac{1}{2}x\right)$

period: \_\_\_\_\_

asymptotes: \_\_\_\_\_

range: \_\_\_\_\_

8.  $y = -2 \csc\left(x - \frac{\pi}{4}\right)$

period: \_\_\_\_\_

asymptotes: \_\_\_\_\_

range: \_\_\_\_\_

**Solve each problem.**

9. Graph the function  $y = 2 \sin x - \cos x$  for  $x$  between  $-2\pi$  and  $2\pi$  using the technique of adding the  $y$ -coordinates. Draw and label the axes appropriately.

10. The population in a particular herd of antelope in South Africa oscillates between approximately 300 and 900. The maximum number can be found at the beginning of March, while the minimum number can be found at the beginning of September. Express the population as a function of time in the form  $y = A \sin[B(x - C)] + D$ , where January is counted as month one ( $x = 1$ ).

Name: \_\_\_\_\_

Sketch at least one cycle of the graph of each function. Draw and label the axes appropriately. Determine the period, range, and amplitude for each function, as required.

1.  $y = 3\sin(x)$

period: \_\_\_\_\_  
range: \_\_\_\_\_  
amplitude: \_\_\_\_\_

2.  $y = \cos(\pi x)$

period: \_\_\_\_\_  
range: \_\_\_\_\_  
amplitude: \_\_\_\_\_

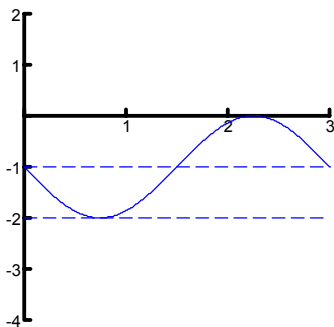
3.  $y = \cos\left(x + \frac{\pi}{4}\right)$

period: \_\_\_\_\_  
range: \_\_\_\_\_  
amplitude: \_\_\_\_\_

4.  $y = -\sin(x) + 2$

period: \_\_\_\_\_  
range: \_\_\_\_\_  
amplitude: \_\_\_\_\_

5. Determine the amplitude and period for the sine curve in the accompanying graph. Write its equation in the form  $y = A \sin(B[x - C]) + D$ .



period: \_\_\_\_\_ amplitude: \_\_\_\_\_

equation: \_\_\_\_\_



Sketch at least one cycle of the graph of each function. Draw and label the axes appropriately. Determine the period, asymptotes, and range for each function.

6.  $y = \sec(2x) + 1$

period: \_\_\_\_\_

asymptotes: \_\_\_\_\_

range: \_\_\_\_\_

7.  $y = \tan\left(x - \frac{\pi}{6}\right)$

period: \_\_\_\_\_

asymptotes: \_\_\_\_\_

range: \_\_\_\_\_

8.  $y = \frac{1}{2} \csc(x)$

period: \_\_\_\_\_

asymptotes: \_\_\_\_\_

range: \_\_\_\_\_

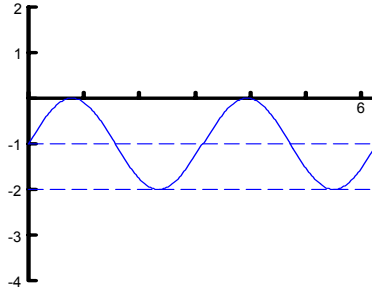
**Solve each problem.**

9. Graph the function  $y = \sin x + 2\cos x$  for  $x$  between  $-2\pi$  and  $2\pi$  using the technique of adding the  $y$ -coordinates. Draw and label the axes appropriately.

10. The population in a particular herd of antelope in South Africa oscillates between approximately 200 and 500. The maximum number can be found at the beginning of February, while the minimum number can be found at the beginning of August. Express the population as a function of time in the form  $y = A \sin[B(x - C)] + D$ , where January is counted as month one ( $x = 1$ ).

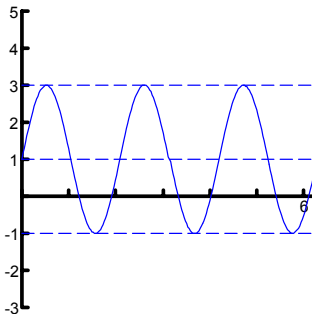
**Multiple Choice: Choose the best answer for each.**

Use the following graph, shown for  $0 \leq x \leq 2\pi$ , to answer questions 1 - 4.



- \_\_\_\_\_ 1. **What is the amplitude of the above graph?**  
 a. 1                                      b. 2                                      c.  $2\pi$                                       d.  $\pi$
- \_\_\_\_\_ 2. **What is the period of the above graph?**  
 a. 1                                      b. 2                                      c.  $2\pi$                                       d.  $\pi$
- \_\_\_\_\_ 3. **Of which of the following trigonometric functions could this be the graph?**  
 a. Secant                                      b. Tangent                                      c. Cosecant                                      d. Sine
- \_\_\_\_\_ 4. **What is the range of this graph?**  
 a.  $[0, 2\pi]$                                       b.  $(-\infty, \infty)$                                       c.  $[-2, 0]$                                       d.  $[-1, 0]$

Use the following graph, shown for  $0 \leq x \leq 2\pi$ , to answer questions 5.

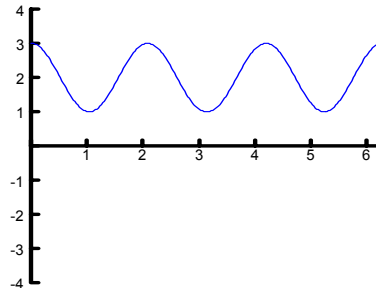


- \_\_\_\_\_ 5. **Which of the following could be the equation for the above graph?**
- a.  $y = -2 \sin (2(x - 1)) + 1$   
 b.  $y = 2 \sin (3x) + 1$   
 c.  $y = 2 \sin (3(x + 1))$   
 d.  $y = 4 \sin (3(x - 1))$



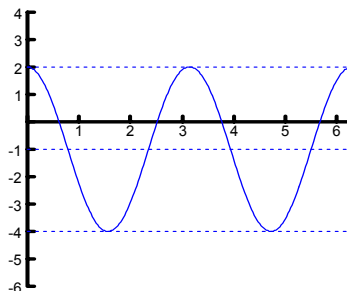
**Multiple Choice: Choose the best answer for each.**

Use the following graph, shown for  $0 \leq x \leq 2\pi$ , to answer questions 1 - 4.



- \_\_\_\_\_ 1. **What is the amplitude of the above graph?**  
 a. 1                                      b. 2                                      c.  $2\pi$                                       d.  $\pi$
- \_\_\_\_\_ 2. **What is the period of the above graph?**  
 a. 1                                      b.  $\frac{2\pi}{3}$                                       c.  $\pi$                                       d.  $2\pi$
- \_\_\_\_\_ 3. **Of which of the following trigonometric functions could this be the graph?**  
 a. Secant                                      b. Sine                                      c. Cosecant                                      d. Tangent
- \_\_\_\_\_ 4. **What is the range of this graph?**  
 a.  $[0, 2\pi]$                                       b.  $(-\infty, \infty)$                                       c.  $[1, 2]$                                       d.  $[1, 3]$

Use the following graph, shown for  $0 \leq x \leq 2\pi$ , to answer questions 5.



- \_\_\_\_\_ 5. **Which of the following could be the equation for the above graph?**
- a.  $y = -3 \cos (2(x - 1)) - 1$   
 b.  $y = 2 \cos (3x) - 1$   
 c.  $y = 3 \cos (2x) - 1$   
 d.  $y = 6 \cos (3(x - 1))$

