

# Supplementary Trigonometry Exercise Problems

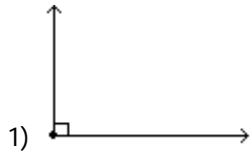
by

Professor Yom

# Trig Section 1.1: Angles

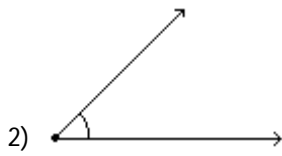
MULTIPLE CHOICE.

Classify the angle as acute, right, obtuse, or straight.



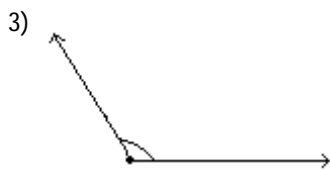
- A) Obtuse                      B) Straight                      C) Acute                      D) Right

1) \_\_\_\_\_



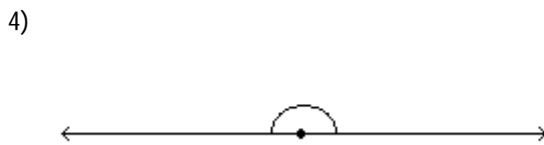
- A) Right                      B) Obtuse                      C) Straight                      D) Acute

2) \_\_\_\_\_



- A) Right                      B) Obtuse                      C) Straight                      D) Acute

3) \_\_\_\_\_



- A) Obtuse                      B) Right                      C) Straight                      D) Acute

4) \_\_\_\_\_

If possible, find the indicated complement or supplement of the given angle.

5)  $66^\circ$ ; supplement

- A)  $24^\circ$                       B)  $204^\circ$                       C)  $294^\circ$                       D)  $114^\circ$

5) \_\_\_\_\_

6)  $118^\circ$ ; supplement

- A)  $242^\circ$                       B)  $62^\circ$   
C) No supplement                      D)  $152^\circ$

6) \_\_\_\_\_

7)  $7^\circ$ ; complement

- A)  $83^\circ$                       B)  $173^\circ$                       C)  $263^\circ$                       D)  $353^\circ$

7) \_\_\_\_\_

8)  $147^\circ$ ; complement

- A)  $147^\circ$                       B) No complement  
C)  $33^\circ$                       D)  $57^\circ$

8) \_\_\_\_\_

SHORT ANSWER.

Find the measure of the indicated angle.

9) Two angles of a triangle are  $50^\circ$  and  $30^\circ$ . Find the third angle.

9) \_\_\_\_\_

10) Two angles of a triangle are  $40^\circ$  and  $70^\circ$ . Find the third angle.

10) \_\_\_\_\_

Answer Key

Testname: MATH 06 - TRIG SECTION 0

- 1) D
- 2) D
- 3) B
- 4) C
- 5) D
- 6) B
- 7) A
- 8) B
- 9)  $100^\circ$
- 10)  $70^\circ$

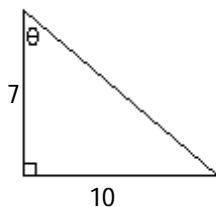
# Trig Section 1.2: The Trigonometric Ratios

## MULTIPLE CHOICE.

Find the value of the indicated trigonometric function of the angle  $\theta$  in the figure. Give an exact answer with a rational denominator.

1)

1) \_\_\_\_\_



Find  $\csc \theta$ .

A)  $\csc \theta = \frac{\sqrt{149}}{7}$

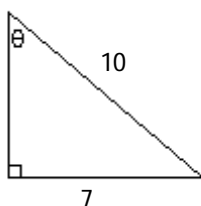
B)  $\csc \theta = \frac{7\sqrt{149}}{149}$

C)  $\csc \theta = \frac{\sqrt{149}}{10}$

D)  $\csc \theta = \frac{10\sqrt{149}}{149}$

2)

2) \_\_\_\_\_



Find  $\cot \theta$ .

A)  $\frac{10\sqrt{51}}{51}$

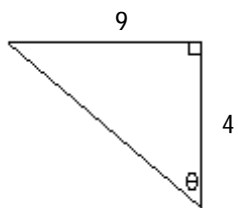
B)  $\frac{\sqrt{51}}{10}$

C)  $\frac{\sqrt{51}}{7}$

D)  $\frac{7\sqrt{51}}{51}$

3)

3) \_\_\_\_\_



Find  $\cot \theta$ .

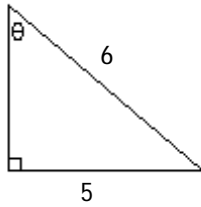
A)  $\cot \theta = \frac{9}{4}$

B)  $\cot \theta = \frac{4}{9}$

C)  $\cot \theta = \frac{4\sqrt{97}}{97}$

D)  $\cot \theta = \frac{9\sqrt{97}}{97}$

4)



4) \_\_\_\_\_

Find  $\cot \theta$ .

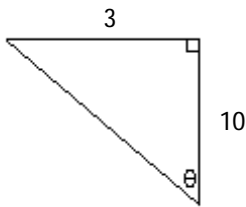
A)  $\frac{\sqrt{11}}{5}$

B)  $\frac{6\sqrt{11}}{11}$

C)  $\frac{5\sqrt{11}}{11}$

D)  $\frac{\sqrt{11}}{6}$

5)



5) \_\_\_\_\_

Find  $\tan \theta$ .

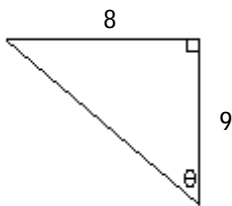
A)  $\tan \theta = \frac{10}{3}$

B)  $\tan \theta = \frac{\sqrt{109}}{3}$

C)  $\tan \theta = \frac{\sqrt{109}}{10}$

D)  $\tan \theta = \frac{3}{10}$

6)



6) \_\_\_\_\_

Find  $\tan \theta$ .

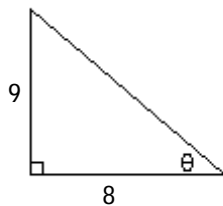
A)  $\tan \theta = \frac{8}{9}$

B)  $\tan \theta = \frac{\sqrt{145}}{8}$

C)  $\tan \theta = \frac{\sqrt{145}}{9}$

D)  $\tan \theta = \frac{9}{8}$

7)



7) \_\_\_\_\_

Find  $\cos \theta$ .

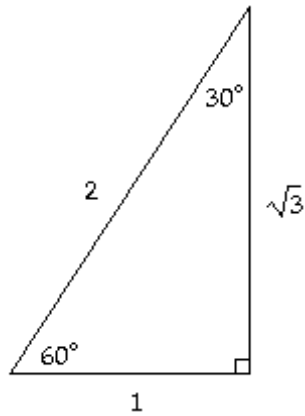
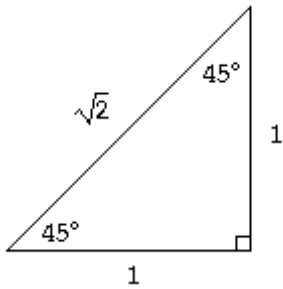
A)  $\cos \theta = \frac{\sqrt{145}}{9}$

B)  $\cos \theta = \frac{9\sqrt{145}}{145}$

C)  $\cos \theta = \frac{8\sqrt{145}}{145}$

D)  $\cos \theta = \frac{\sqrt{145}}{8}$

Use the given triangles to evaluate the expression. Rationalize all denominators.



8)  $\tan 30^\circ$

A)  $\sqrt{3}$

B)  $\frac{\sqrt{3}}{3}$

C)  $\frac{\sqrt{3}}{2}$

D) 1

8) \_\_\_\_\_

9)  $\csc 60^\circ$

A) 2

B)  $\frac{2\sqrt{3}}{3}$

C)  $\frac{\sqrt{3}}{2}$

D)  $\sqrt{2}$

9) \_\_\_\_\_

10)  $\tan 45^\circ - \sin 60^\circ$

A)  $\frac{2\sqrt{3} - 3\sqrt{2}}{6}$

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

C)  $\frac{-\sqrt{3}}{6}$

D)  $\frac{2 - \sqrt{3}}{2}$

10) \_\_\_\_\_

11)  $\cot 60^\circ - \cos 45^\circ$

A)  $\frac{2\sqrt{2} - 3\sqrt{3}}{6}$

B)  $\frac{2\sqrt{3} - 3\sqrt{2}}{6}$

C)  $\frac{2 - \sqrt{3}}{2}$

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

11) \_\_\_\_\_

12)  $\sec 45^\circ$

A)  $\sqrt{3}$

B)  $\sqrt{2}$

C)  $\frac{\sqrt{2}}{2}$

D)  $\frac{2\sqrt{3}}{3}$

12) \_\_\_\_\_

13)  $1 - \sin^2 30^\circ - \sin^2 60^\circ$

A)  $\frac{1}{4}$

B)  $\frac{1 - \sqrt{3}}{2}$

C) 0

D) 1

13) \_\_\_\_\_

14)  $1 + \cot^2 30^\circ - \sec^2 45^\circ$

A) 2

B) 0

C) 1

D) 3

14) \_\_\_\_\_

SHORT ANSWER.

Use the definition or identities to find the exact value of the indicated trigonometric function of the acute angle  $\theta$ .

15)  $\sec \theta = \frac{13}{12}$  Find  $\csc \theta$ . 15) \_\_\_\_\_

16)  $\tan \theta = \frac{7}{\sqrt{15}}$  Find  $\sin \theta$  and  $\cos \theta$ . 16) \_\_\_\_\_

17)  $\cos \theta = \frac{2\sqrt{6}}{5}$  Find  $\sin \theta$  and  $\tan \theta$ . 17) \_\_\_\_\_

18)  $\cot \theta = \frac{\sqrt{3}}{3}$  Find  $\sin \theta$ . 18) \_\_\_\_\_



Answer Key

Testname: MATH 06 - TRIG SECTION 1

1) C

2) C

3) B

4) A

5) D

6) A

7) C

8) B

9) B

10) D

11) B

12) B

13) C

14) A

15)  $\frac{13}{5}$

16)  $\sin \theta = \frac{7}{8}, \cos \theta = \frac{\sqrt{15}}{8}$

17)  $\sin \theta = \frac{1}{5}, \tan \theta = \frac{\sqrt{6}}{12}$

18)  $\frac{\sqrt{3}}{2}$

## Trig Section 1.3: Applying Right Triangles

SHORT ANSWER.

Solve the problem.

1) A 29 foot water slide has a 17 foot vertical ladder. How far is it along the ground from the end of the slide back to the base of the ladder that leads to the slide? 1) \_\_\_\_\_

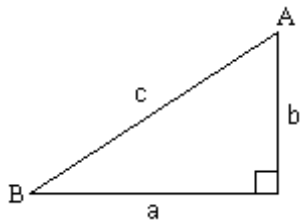
2) A painter leans a 30 foot ladder against one wall of a house. At what height does the ladder touch the wall if the foot of the ladder is 10 ft from the base of the wall? 2) \_\_\_\_\_

3) From a distance of 45 feet from the base of a building, the angle of elevation to the top of the building is  $68^\circ$ . Estimate the height of the building to the nearest foot. 3) \_\_\_\_\_

4) A kite is currently flying at an altitude of 15 meters above the ground. If the angle of elevation from the ground to the kite is  $35^\circ$ , find the length of the kite string to the nearest meter. 4) \_\_\_\_\_

5) From a distance of 1217 feet from a spotlight, the angle of elevation to a cloud base is  $43^\circ$ . Find the height of the cloud base to the nearest foot. 5) \_\_\_\_\_

Solve the right triangle using the information given. Round answers to two decimal places, if necessary.



6)  $b = 8$ ,  $A = 30^\circ$ ; Find  $a$ ,  $c$ , and  $B$ .

6) \_\_\_\_\_

7)  $a = 2$ ,  $A = 40^\circ$ ; Find  $b$ ,  $c$ , and  $B$ .

7) \_\_\_\_\_

8)  $a = 7$ ,  $b = 4$ ; Find  $c$ ,  $A$ , and  $B$ .

8) \_\_\_\_\_

9)  $a = 4$ ,  $c = 9$ ; Find  $b$ ,  $A$ , and  $B$ .

9) \_\_\_\_\_

## Answer Key

### Testname: MATH 06 - TRIG SECTION 2

1)  $\approx 23.5$  ft

2)  $\approx 28.3$  ft

3) 111 ft

4) 26 m

5) 1135 ft

6)  $a = 4.62$

$c = 9.24$

$B = 60^\circ$

7)  $b = 2.38$

$c = 3.11$

$B = 50^\circ$

8)  $c = 8.06$

$A = 60.26^\circ$

$B = 29.74^\circ$

9)  $b = 8.06$

$A = 26.39^\circ$

$B = 63.61^\circ$

# Trig Section 1.4: Trigonometric Functions of Any Angles

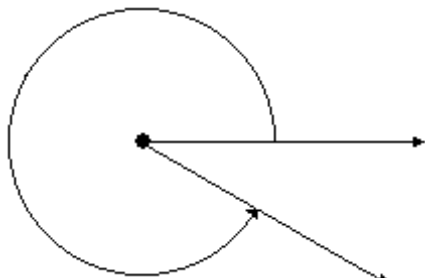
MULTIPLE CHOICE.

Draw the angle in standard position.

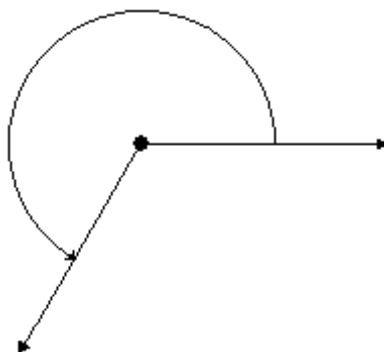
1)  $330^\circ$

1) \_\_\_\_\_

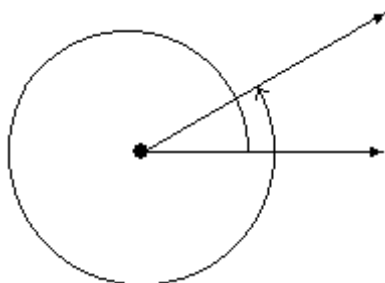
A)



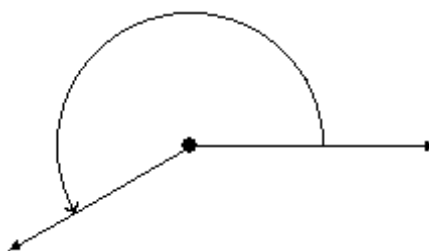
B)



C)



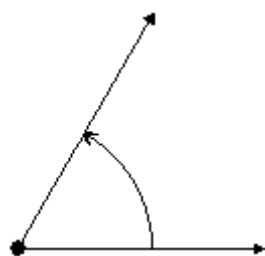
D)



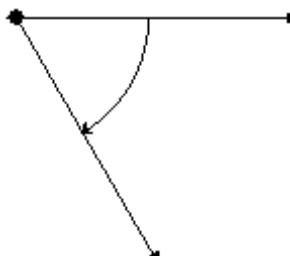
2)  $60^\circ$

2) \_\_\_\_\_

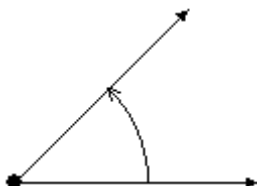
A)



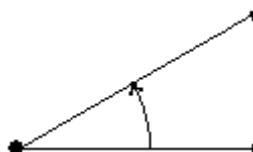
B)



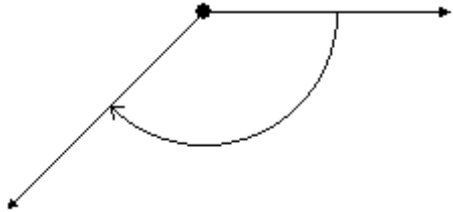
C)



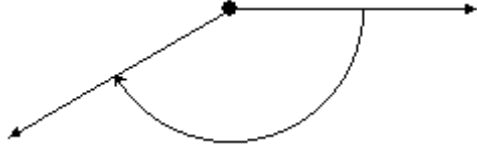
D)



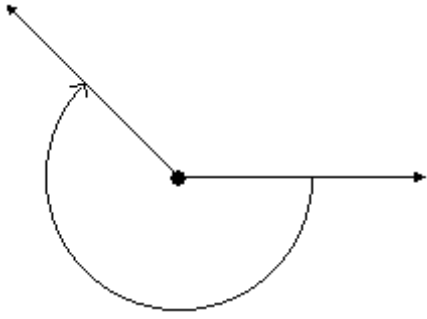
3)  $-150^\circ$   
A)



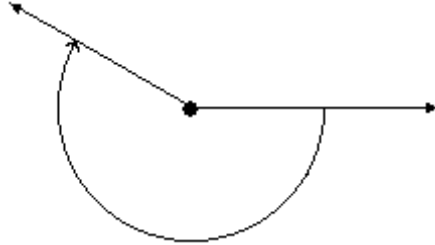
C)



B)



D)

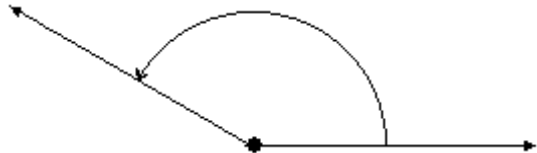


3) \_\_\_\_\_

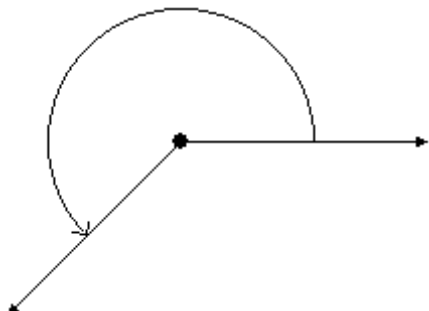
4)  $405^\circ$

4) \_\_\_\_\_

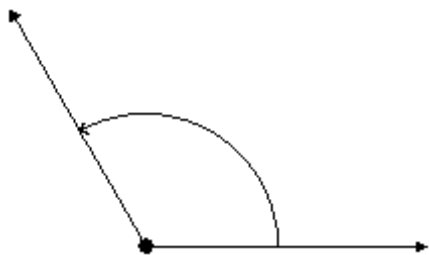
A)



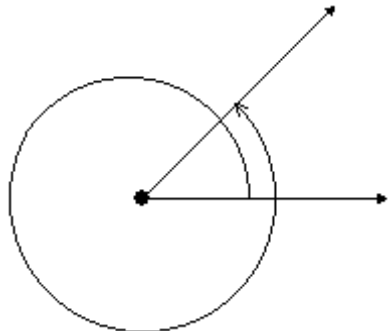
B)



C)



D)



Find a positive angle less than  $360^\circ$  that is coterminal with the given angle.

5)  $-185^\circ$

5) \_\_\_\_\_

A)  $-5^\circ$

B)  $185^\circ$

C)  $355^\circ$

D)  $175^\circ$

6)  $548^\circ$

6) \_\_\_\_\_

A)  $274^\circ$

B)  $178^\circ$

C)  $368^\circ$

D)  $188^\circ$

7)  $-1031^\circ$

7) \_\_\_\_\_

A)  $671^\circ$

B)  $49^\circ$

C)  $311^\circ$

D)  $131^\circ$

SHORT ANSWER.

Use a coterminal angle to find the exact value of the expression. Do not use a calculator.

8)  $\cos 405^\circ$

8) \_\_\_\_\_

9)  $\csc -660^\circ$

9) \_\_\_\_\_

10)  $\cot -180^\circ$

10) \_\_\_\_\_

MULTIPLE CHOICE.

Name the quadrant in which the angle  $\theta$  lies.

11)  $\sin \theta > 0, \quad \cos \theta < 0$

A) I

B) II

C) III

D) IV

11) \_\_\_\_\_

12)  $\tan \theta > 0, \quad \sin \theta < 0$

A) I

B) II

C) III

D) IV

12) \_\_\_\_\_

13)  $\cot \theta < 0, \quad \cos \theta > 0$

A) I

B) II

C) III

D) IV

13) \_\_\_\_\_

Solve the problem.

14) Which of the following trigonometric values are negative?

I.  $\sin(-292^\circ)$

II.  $\tan(-193^\circ)$

III.  $\cos(-207^\circ)$

IV.  $\cot 222^\circ$

A) II, III, and IV

B) III only

C) I and III

D) II and III

14) \_\_\_\_\_

SHORT ANSWER.

Find the reference angle of the given angle.

15)  $122^\circ$

15) \_\_\_\_\_

16)  $-42^\circ$

16) \_\_\_\_\_

17)  $379^\circ$

17) \_\_\_\_\_



18)  $-253^\circ$

18) \_\_\_\_\_

19)  $-517^\circ$

19) \_\_\_\_\_

Use the reference angle to find the exact value of the expression. Do not use a calculator.

20)  $\sin 495^\circ$

20) \_\_\_\_\_

21)  $\tan 750^\circ$

21) \_\_\_\_\_

22)  $\cot 390^\circ$

22) \_\_\_\_\_

Find the exact value of the indicated trigonometric function of  $\theta$ .

23)  $\cos \theta = \frac{2}{9}$ ,  $\tan \theta < 0$  Find  $\sin \theta$ .

23) \_\_\_\_\_

24)  $\sec \theta = \frac{5}{2}$ ,  $\theta$  in quadrant IV Find  $\tan \theta$ .

24) \_\_\_\_\_

25)  $\tan \theta = -\frac{10}{3}$ ,  $\theta$  in quadrant II Find  $\cos \theta$ .

25) \_\_\_\_\_

26)  $\cot \theta = -\frac{9}{2}$ ,  $\cos \theta < 0$  Find  $\csc \theta$ .

26) \_\_\_\_\_

## Answer Key

Testname: MATH 06 - TRIG SECTION 3

1) A

2) A

3) C

4) D

5) D

6) D

7) B

8)  $\frac{\sqrt{2}}{2}$

9)  $\frac{2\sqrt{3}}{3}$

10) undefined

11) B

12) C

13) D

14) D

15)  $58^\circ$

16)  $42^\circ$

17)  $19^\circ$

18)  $73^\circ$

19)  $23^\circ$

20)  $\frac{\sqrt{2}}{2}$

21)  $\frac{\sqrt{3}}{3}$

22)  $\sqrt{3}$

23)  $-\frac{\sqrt{77}}{9}$

24)  $-\frac{\sqrt{21}}{2}$

25)  $-\frac{3\sqrt{109}}{109}$

26)  $\frac{\sqrt{85}}{2}$

# Trig Section 4.1 & 4.2: Radians and Degrees / Arclength

SHORT ANSWER.

Convert the angle in degrees to radians. Express the answer in decimal form, rounded to two decimal places.

1)  $-139^\circ$

1) \_\_\_\_\_

2)  $-480^\circ$

2) \_\_\_\_\_

3)  $6^\circ$

3) \_\_\_\_\_

4)  $12^\circ$

4) \_\_\_\_\_

Convert the angle in radians to degrees. Express the answer in decimal form, rounded to two decimal places.

5) 2

5) \_\_\_\_\_

6)  $\sqrt{2}$

6) \_\_\_\_\_

Convert the angle in radians to degrees.

7)  $3\pi$

7) \_\_\_\_\_

8)  $\frac{\pi}{6}$

8) \_\_\_\_\_

9)  $\frac{6\pi}{7}$

9) \_\_\_\_\_

10)  $\frac{\pi}{4}$

10) \_\_\_\_\_

Solve the problem.

11) The minute hand of a clock is 7 inches long. How far does the tip of the minute hand move in 5 minutes? If necessary, round the answer to two decimal places.

11) \_\_\_\_\_

If  $s$  denotes the length of the arc of a circle of radius  $r$  subtended by a central angle  $\theta$ , find the missing quantity.

12)  $s = 6.24$  meters,  $\theta = 2.6$  radians,  $r = ?$

12) \_\_\_\_\_

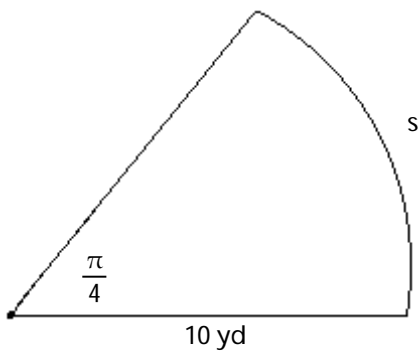
13)  $r = \frac{2}{3}$  feet,  $s = 14$  feet,  $\theta = ?$

13) \_\_\_\_\_

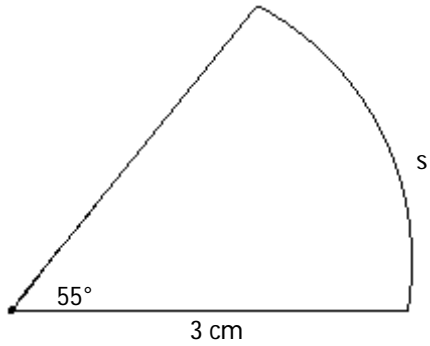
Find the length  $s$ . Round the answer to three decimal places.

14)

14) \_\_\_\_\_

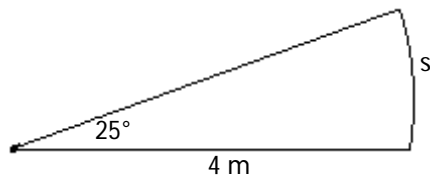


15)



15) \_\_\_\_\_

16)



16) \_\_\_\_\_

Solve the problem.

17) For a circle of radius 4 feet, find the arc length  $s$  subtended by a central angle of  $60^\circ$ . Round to the nearest hundredth. 17) \_\_\_\_\_

18) A pendulum swings through an angle of  $30^\circ$  each second. If the pendulum is 35 inches long, how far does its tip move each second? If necessary, round the answer to two decimal places. 18) \_\_\_\_\_

Answer Key

Testname: MATH 06 - TRIG SECTION 4&5

- 1) -2.43
- 2)  $-\frac{8\pi}{3}$
- 3)  $\frac{\pi}{30}$
- 4) 0.21
- 5)  $114.59^\circ$
- 6)  $81.03^\circ$
- 7)  $540^\circ$
- 8)  $30^\circ$
- 9)  $154.29^\circ$
- 10)  $45^\circ$
- 11) 3.67 in.
- 12) 2.4 m
- 13) 21 radians
- 14) 7.854 yd
- 15) 2.88 cm
- 16) 1.745 m
- 17) 4.19 ft
- 18) 18.33 in.

# Trig Section 5.1: Graphing the Trigonometric Functions / Unit Circle

## MULTIPLE CHOICE.

Solve the problem.

- 1) What is the domain of the cosine function? 1) \_\_\_\_\_  
A) all real numbers, except integral multiples of  $\pi$  ( $180^\circ$ )  
B) all real numbers  
C) all real numbers, except odd multiples of  $\frac{\pi}{2}$  ( $90^\circ$ )  
D) all real numbers from -1 to 1, inclusive
- 2) What is the range of the cosine function? 2) \_\_\_\_\_  
A) all real numbers greater than or equal to 0  
B) all real numbers greater than or equal to 1 or less than or equal to -1  
C) all real numbers from -1 to 1, inclusive  
D) all real numbers

## SHORT ANSWER.

Solve the equation on the interval  $0 \leq \theta < 2\pi$ .

- 3)  $\cos x = 0$  3) \_\_\_\_\_
- 4)  $\sin x = -1$  4) \_\_\_\_\_
- 5)  $\tan x = -1$  5) \_\_\_\_\_
- 6)  $2 \cos x - \sqrt{3} = 0$  6) \_\_\_\_\_
- 7)  $2 \sin x + \sqrt{2} = 0$  7) \_\_\_\_\_

8)  $2 \sin x - 1 = 0$

8) \_\_\_\_\_

9)  $\cos \theta - 1 = 0$

9) \_\_\_\_\_

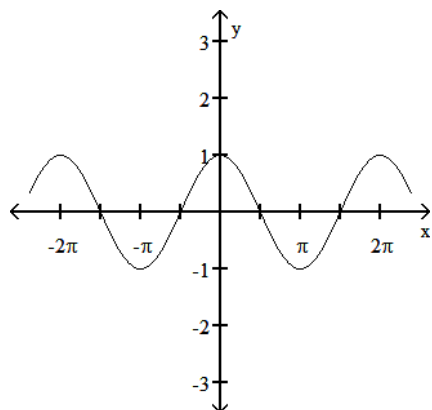
MULTIPLE CHOICE.

Match the function with its graph.

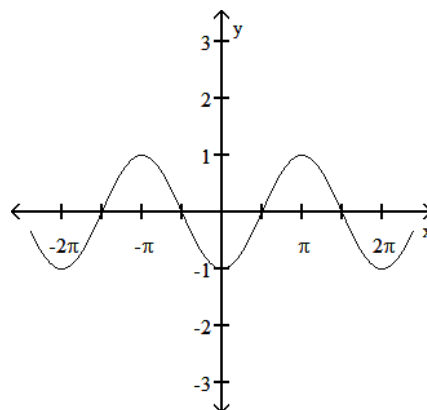
10)  $y = \sin x$

10) \_\_\_\_\_

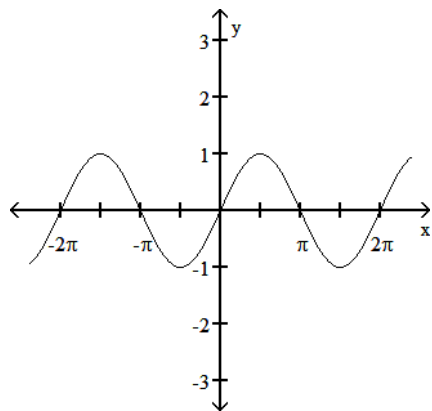
A)



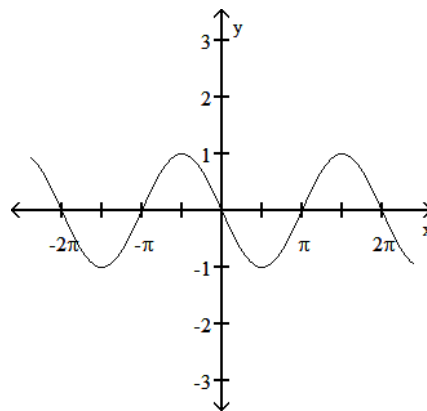
B)



C)

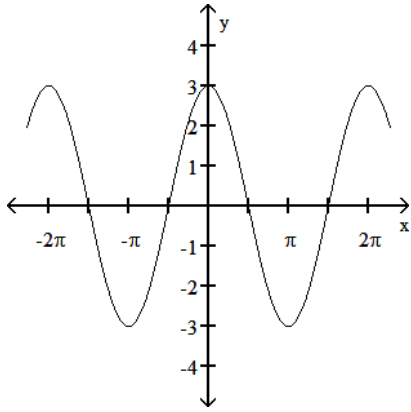


D)

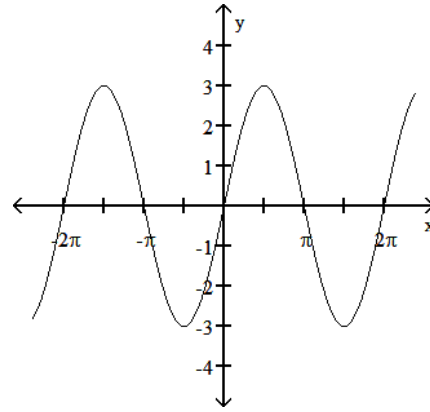




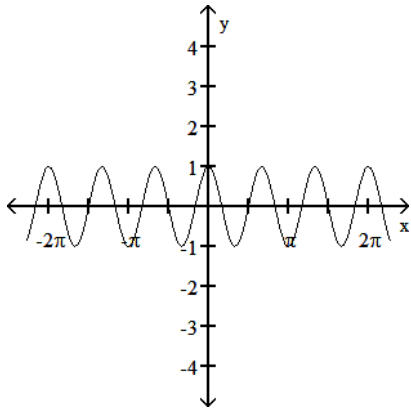
11)  $y = 3 \sin x$   
A)



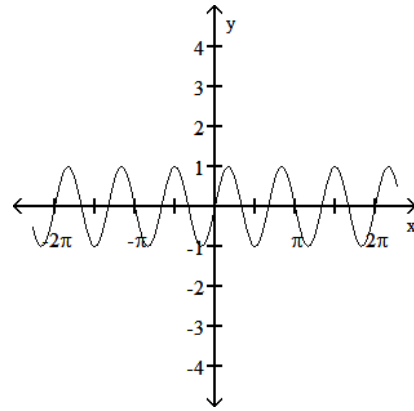
B)



C)



D)

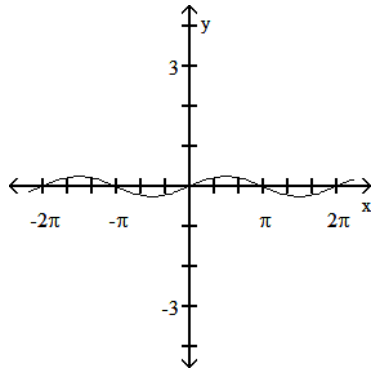


11) \_\_\_\_\_

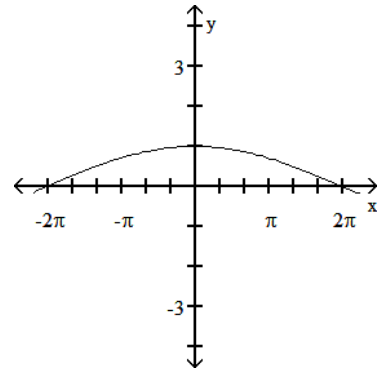
12)  $y = \frac{1}{4} \sin x$

12) \_\_\_\_\_

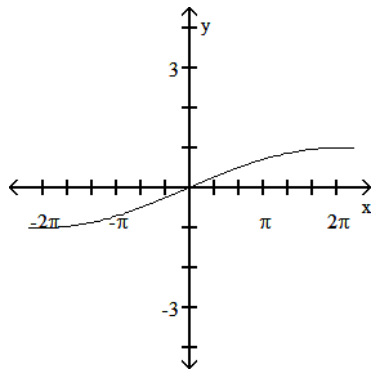
A)



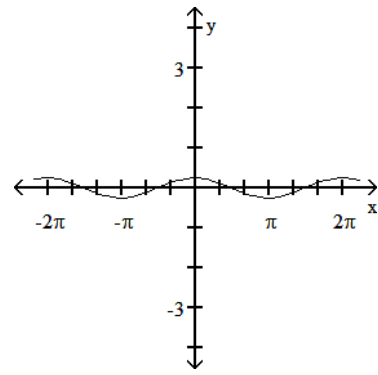
B)



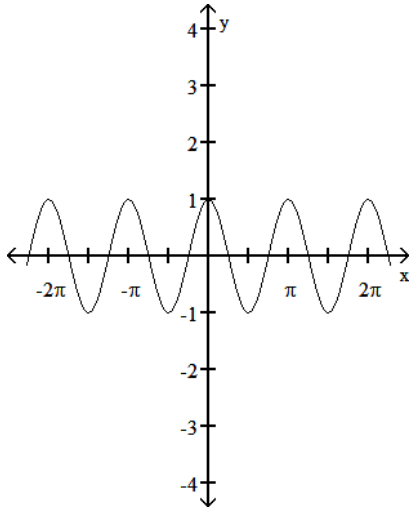
C)



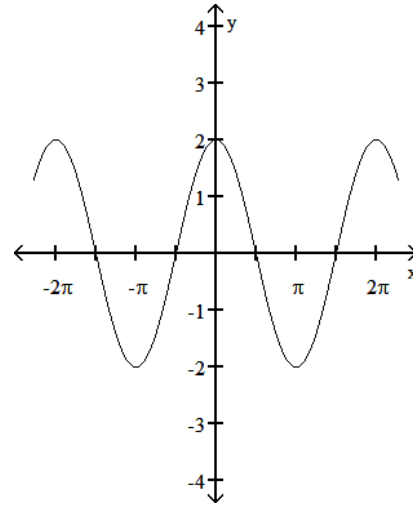
D)



13)  $y = 2 \cos x$   
A)

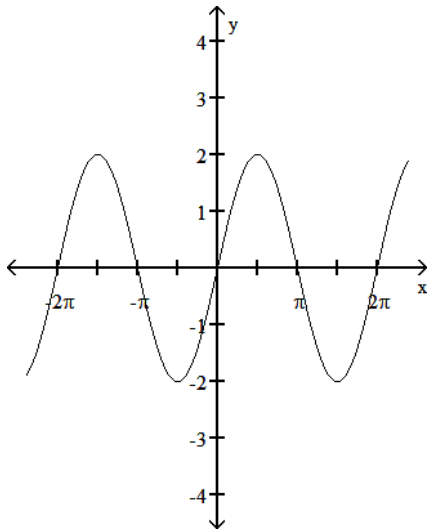


B)

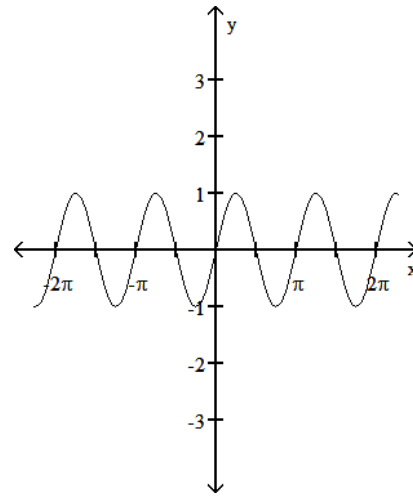


13) \_\_\_\_\_

C)



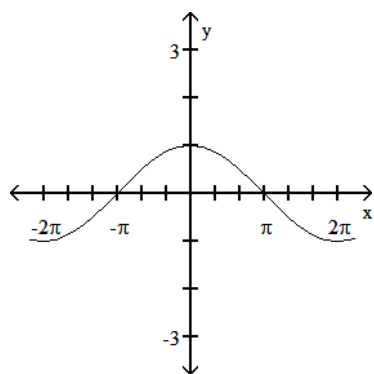
D)



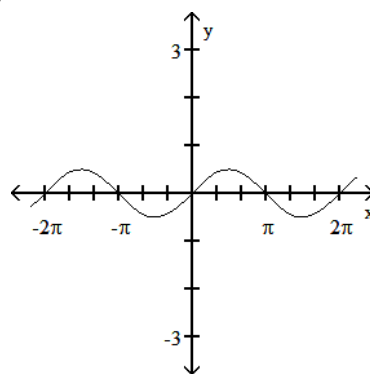
14)  $y = \frac{1}{2} \cos x$

14) \_\_\_\_\_

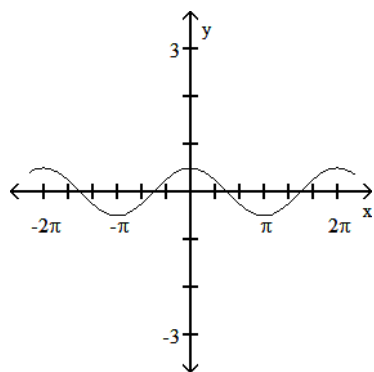
A)



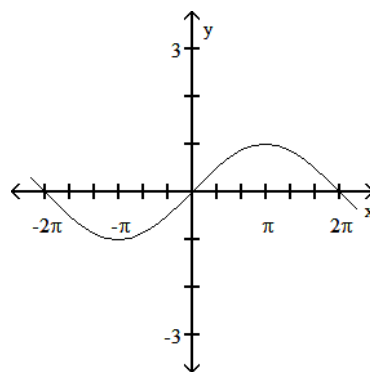
B)



C)



D)

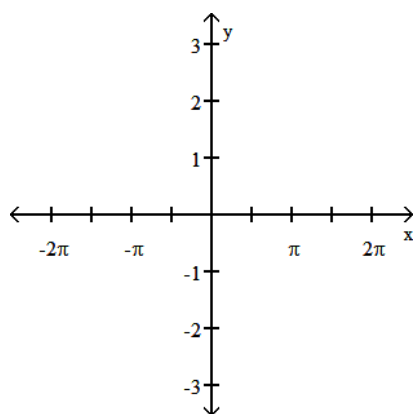


SHORT ANSWER.

Graph the function using key points.

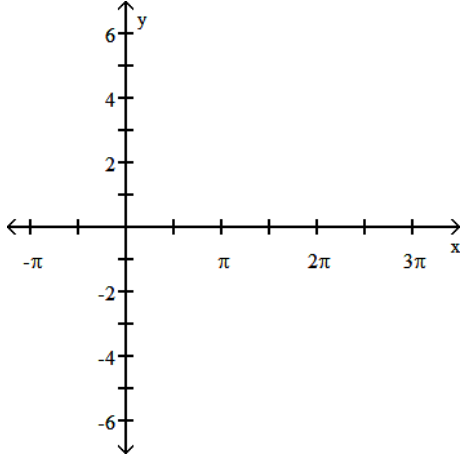
15)  $y = \sin x - 2$

15) \_\_\_\_\_



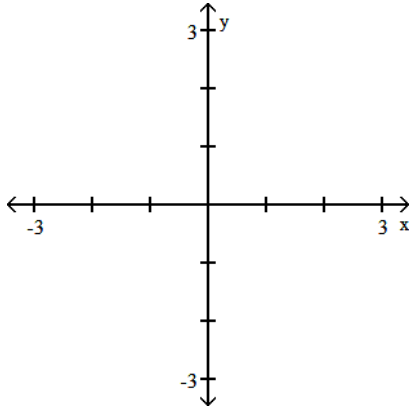
Graph the function.

16)  $y = 2 \sin x$



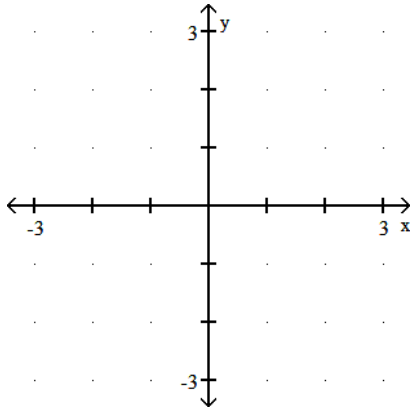
16) \_\_\_\_\_

17)  $y = -3 \cos x$



17) \_\_\_\_\_

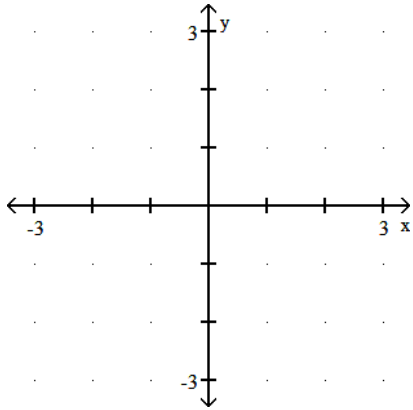
18)  $y = -2 \sin x$



18) \_\_\_\_\_

19)  $y = 0.4 \cos x$

19) \_\_\_\_\_

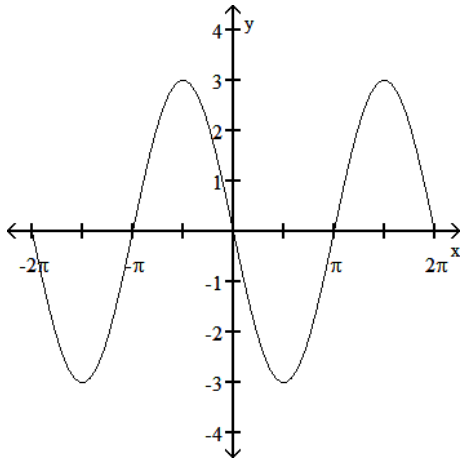


MULTIPLE CHOICE.

Find an equation in the form  $y = A \cos x$  or  $y = A \sin x$  that represents the given graph.

20)

20) \_\_\_\_\_



A)  $y = 3 \cos x$

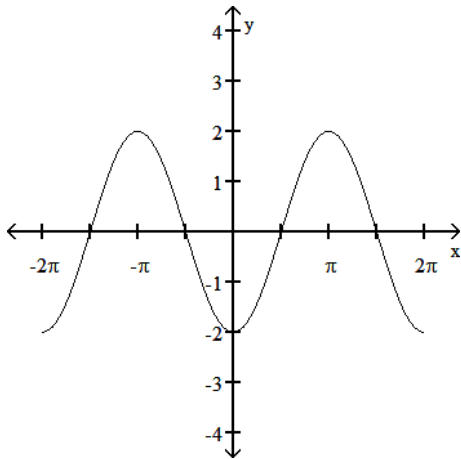
B)  $y = -3 \cos x$

C)  $y = -3 \sin x$

D)  $y = 3 \sin x$

21)

21) \_\_\_\_\_



A)  $y = 2 \cos x$

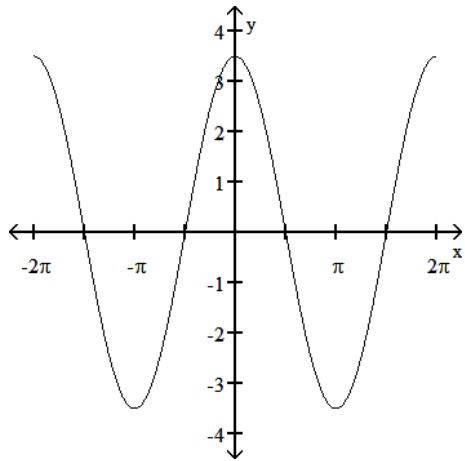
B)  $y = -2 \cos x$

C)  $y = -2 \sin x$

D)  $y = 2 \sin x$

22)

22) \_\_\_\_\_



A)  $y = 3.5\cos x$

B)  $y = -3.5\cos x$

C)  $y = 3.5\sin x$

D)  $y = -3.5\sin x$

Answer Key

Testname: MATH 06 - TRIG SECTION 7

1) B

2) C

3)  $\frac{\pi}{2}, \frac{3\pi}{2}$

4)  $\frac{3\pi}{2}$

5)  $\frac{3\pi}{4}, \frac{7\pi}{4}$

6)  $\frac{\pi}{6}, \frac{11\pi}{6}$

7)  $\frac{5\pi}{4}, \frac{7\pi}{4}$

8)  $\frac{\pi}{6}, \frac{5\pi}{6}$

9) 0

10) C

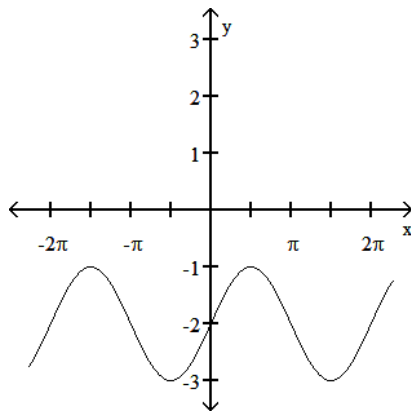
11) B

12) A

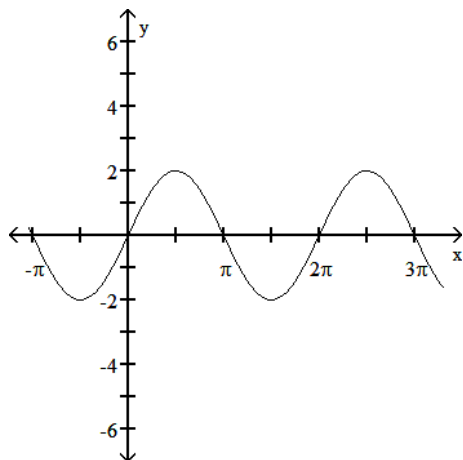
13) B

14) C

15)



16)

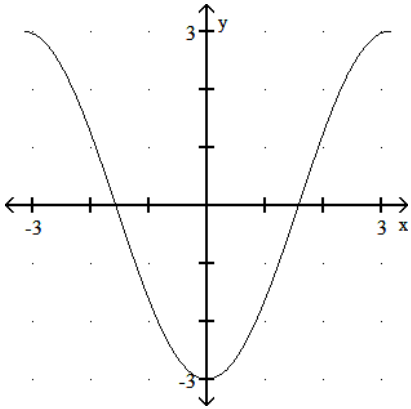




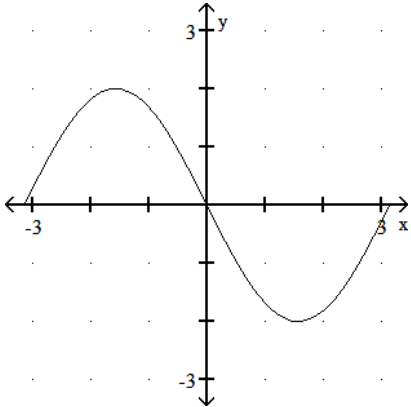
Answer Key

Testname: MATH 06 - TRIG SECTION 7

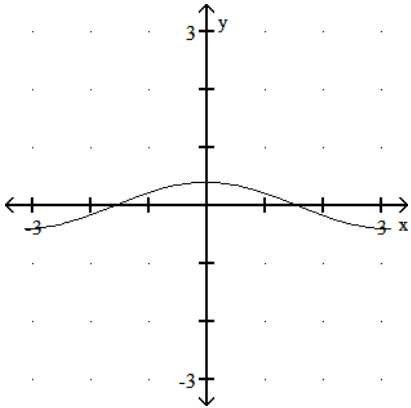
17)



18)



19)



20) C

21) B

22) A

# Trig Section 3.1: Trigonometric Identities

## MULTIPLE CHOICE.

Use the fundamental identities and appropriate algebraic operations to simplify the expression.

1)  $\cos x (\csc x - \sec x) - \cot x$  1) \_\_\_\_\_  
A) -1 B) 1 C) 0 D)  $\cos^2 x - \tan^2 x$

2)  $\sin^2 x (\cot^2 x + 1)$  2) \_\_\_\_\_  
A) 1 B)  $\cos^2 x + 1$  C)  $\tan^2 x$  D) -1

3)  $\frac{\cos x}{1 + \sin x} + \tan x$  3) \_\_\_\_\_  
A) 1 B)  $\cos x + \sin x$  C)  $\sin^2 x$  D)  $\sec x$

4)  $\frac{1 + \tan^2 x}{\sec x}$  4) \_\_\_\_\_  
A)  $\csc x$  B)  $\sec x$  C)  $-\sec x$  D) 1

5)  $\frac{\cos^2 x}{\sin^2 x} + \cos x \sec x$  5) \_\_\_\_\_  
A)  $\csc x$  B)  $\cot^2 x$  C)  $\csc^2 x$  D)  $\sec^2 x$

6)  $1 - \frac{\cos^2 x}{1 + \sin x}$  6) \_\_\_\_\_  
A) 0 B)  $\cot x$  C)  $\sin x$  D)  $\tan x$

## SHORT ANSWER.

Verify the identity.

7)  $\tan x (\csc x - \sin x) = \cos x$  7) \_\_\_\_\_

8)  $(1 - \cos x)(1 + \cos x) = \sin^2 x$  8) \_\_\_\_\_

9)  $(\sec x - \tan x)(\sec x + \tan x) = 1$  9) \_\_\_\_\_

10)  $(1 + \tan^2 x)(1 - \sin^2 x) = 1$  10) \_\_\_\_\_

11)  $\frac{\sec x - 1}{\tan x} = \frac{\tan x}{\sec x + 1}$  11) \_\_\_\_\_

12)  $1 + \sec^2 x \sin^2 x = \sec^2 x$  12) \_\_\_\_\_

## Answer Key

Testname: MATH 06 - TRIG SECTION 8

- 1) A
- 2) A
- 3) D
- 4) B
- 5) C
- 6) C

$$7) \tan x(\csc x - \sin x) = \tan x \cdot \csc x - \tan x \cdot \sin x = \frac{\sin x}{\cos x} \cdot \frac{1}{\sin x} - \frac{\sin x}{\cos x} \cdot \sin x = \frac{1}{\cos x} - \frac{\sin^2 x}{\cos x} = \frac{1 - \sin^2 x}{\cos x} = \frac{\cos^2 x}{\cos x} = \cos$$

x

$$8) (1 - \cos x)(1 + \cos x) = 1 - \cos^2 x = \sin^2 x$$

$$9) (\sec x - \tan x)(\sec x + \tan x) = \sec^2 x - \tan^2 x = 1$$

$$10) (1 + \tan^2 x)(1 - \sin^2 x) = \sec^2 x \cdot \cos^2 x = \frac{1}{\cos^2 x} \cdot \cos^2 x = 1$$

$$11) \frac{\sec x - 1}{\tan x} = \frac{\sec x - 1}{\tan x} \cdot \frac{\sec x + 1}{\sec x + 1} = \frac{\sec^2 x - 1}{\tan x(\sec x + 1)} = \frac{\tan^2 x}{\tan x(\sec x + 1)} = \frac{\tan x}{\sec x + 1}$$

$$12) 1 + \sec^2 x \sin^2 x = 1 + \frac{\sin^2 x}{\cos^2 x} = 1 + \tan^2 x = \sec^2 x.$$