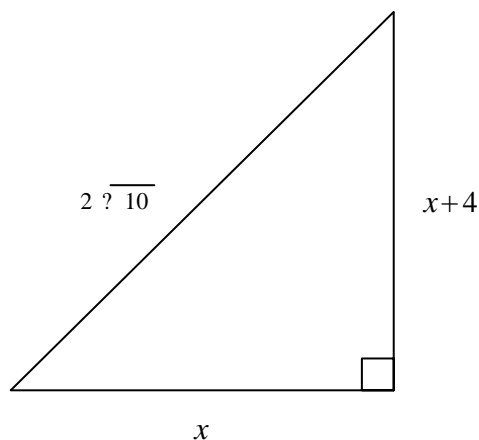


**McKeague/Turner Trigonometry 8e - Chapter 2 Form A**

**Multiple Choice**

Identify the choice that best completes the statement or answers the question.

- \_\_\_\_ 1. Find the complement and supplement of the angle  $55^\circ$ .
- |   |   |
|---|---|
| a. Complement: $45^\circ$<br>Supplement: $145^\circ$  | d. Complement: $125^\circ$<br>Supplement: $305^\circ$ |
| b. Complement: $125^\circ$<br>Supplement: $35^\circ$  | e. Complement: $35^\circ$<br>Supplement: $125^\circ$  |
| c. Complement: $145^\circ$<br>Supplement: $235^\circ$ |   |
- \_\_\_\_ 2. Let triangle  $ABC$  be a right triangle with  $C = 90^\circ$ . If  $c = 19$  and  $a = 6$ , find  $b$ .
- |                 |                       |
|-----------------|-----------------------|
| a. $\sqrt{13}$  | d. $5\sqrt{13}$       |
| b. $\sqrt{397}$ | e. None of the above. |
| c. 13           |                       |
- \_\_\_\_ 3. Solve for  $x$  in the following right triangle:



- |      |      |
|------|------|
| a. 3 | d. 4 |
| b. 2 | e. 5 |
| c. 1 |      |

## McKeague/Turner Trigonometry 8e - Chapter 2 Form A

\_\_\_\_\_ 4. Find the lengths of the shortest two sides of a  $30^\circ - 60^\circ - 90^\circ$  triangle, if the length of the longest side is 16.

a.  $4, \frac{8}{\sqrt{3}}$

b.  $4, 4\sqrt{3}$

c.  $8, 8\sqrt{3}$

d.  $4, \frac{4}{\sqrt{3}}$

e.  $8, \frac{8}{\sqrt{3}}$

\_\_\_\_\_ 5. Find the length of the shorter sides of a  $45^\circ - 45^\circ - 90^\circ$  triangle if the length of the hypotenuse is 21.

a.  $\frac{21\sqrt{2}}{2}$

b.  $\frac{21\sqrt{2}}{4}$

c.  $\frac{21}{2}$

d.  $\frac{21\sqrt{3}}{3}$

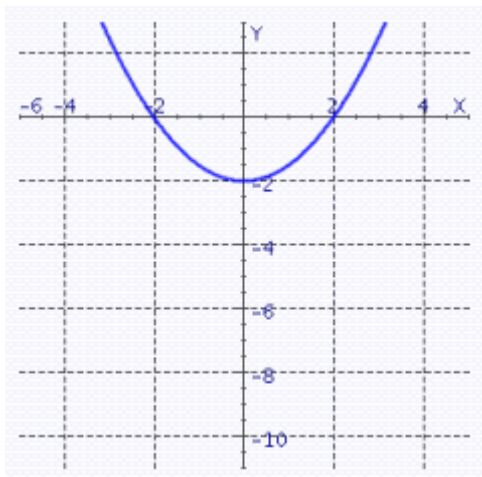
e.  $\frac{21\sqrt{3}}{2}$

## McKeague/Turner Trigonometry 8e - Chapter 2 Form A

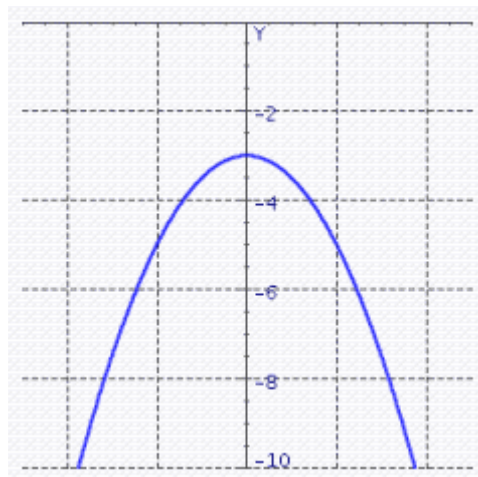
\_\_\_\_\_ 6. Graph the following parabola.

$$f(x) = -\frac{1}{2}x^2 - 2$$

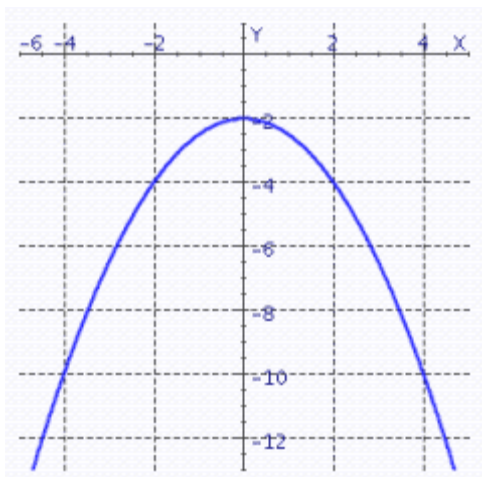
a.



d.

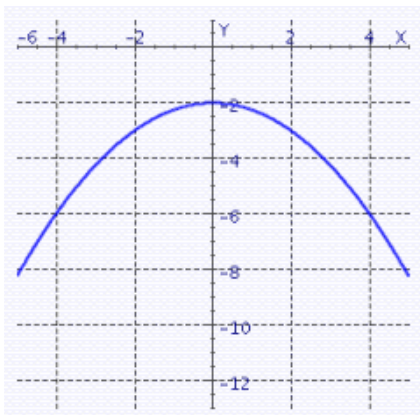


b.



e. None of the above.

c.



## McKeague/Turner Trigonometry 8e - Chapter 2 Form A

- \_\_\_\_ 7. Find the distance between the two points  $(-5, 8)$  and  $(19, 53)$ .
- 102
  - 51
  - 48
  - 153
  - 99
- \_\_\_\_ 8. Determine two coterminal angles (one positive and one negative) for  $\theta = -503^\circ$ .
- $127^\circ, -233^\circ$
  - $307^\circ, -413^\circ$
  - $127^\circ, -323^\circ$
  - $217^\circ, -143^\circ$
  - $217^\circ, -323^\circ$
- \_\_\_\_ 9. Determine which of the following points is located in quadrant 4.
- |              |               |
|--------------|---------------|
| a. $(-3, 7)$ | d. $(-7, -3)$ |
| b. $(3, -7)$ | e. $(7, 3)$   |
| c. $(-7, 3)$ |               |
- \_\_\_\_ 10. Which of the following points lies on the unit circle?
- $\left(\frac{-7}{11}, \frac{4\sqrt{2}}{11}\right)$
  - $\left(\frac{5}{9}, \frac{-4\sqrt{2}}{9}\right)$
  - $\left(\frac{-7}{9}, \frac{-4\sqrt{2}}{9}\right)$
  - $\left(\frac{-5}{13}, \frac{-4\sqrt{2}}{13}\right)$
  - None of the above.

## McKeague/Turner Trigonometry 8e - Chapter 2 Form A

\_\_\_\_ 11. Given  $\sin 30^\circ = \frac{1}{2}$  and  $\cos 30^\circ = \frac{\sqrt{3}}{2}$ , determine the following:

$\csc 30^\circ$

a.  $\csc 30^\circ = \frac{\sqrt{3}}{3}$

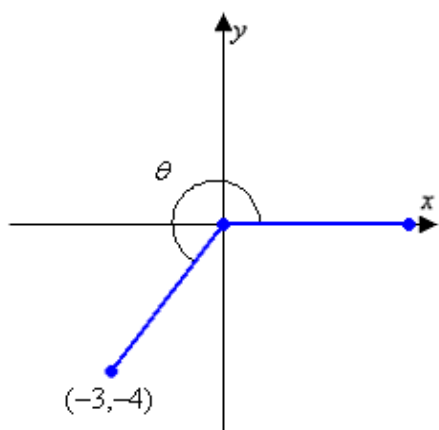
b.  $\csc 30^\circ = \frac{\sqrt{2}}{2}$

c.  $\csc 30^\circ = \sqrt{3}$

d.  $\csc 30^\circ = 2$

e. undefined

\_\_\_\_ 12. Given the figure below, determine the value of  $\sin \theta$ .



a.  $\sin \theta = -\frac{3}{5}$

b.  $\sin \theta = \frac{4}{3}$

c.  $\sin \theta = -\frac{4}{5}$

d.  $\sin \theta = -\frac{3}{4}$

e.  $\sin \theta = \frac{3}{4}$

## McKeague/Turner Trigonometry 8e - Chapter 2 Form A

- \_\_\_\_ 13. The point  $(3, 4)$  is on the terminal side of an angle in standard position. Determine the exact value of  $\cos \theta$ .
- a.  $\cos \theta = -\frac{5}{3}$
  - b.  $\cos \theta = \frac{4}{3}$
  - c.  $\cos \theta = \frac{3}{4}$
  - d.  $\cos \theta = -\frac{4}{3}$
  - e.  $\cos \theta = \frac{3}{5}$
- \_\_\_\_ 14. Indicate the two quadrants  $\theta$  could terminate in if  $\tan \theta = -\frac{13}{23}$ .
- a. Quadrants II and III
  - b. Quadrants I and III
  - c. Quadrants I and IV
  - d. Quadrants II and IV
  - e. Quadrants III and IV
- \_\_\_\_ 15. Evaluate  $\sin 300^\circ$ .
- a.  $\frac{-1}{2}$
  - b.  $\frac{1}{2}$
  - c.  $\frac{\sqrt{3}}{2}$
  - d.  $\frac{-\sqrt{2}}{2}$
  - e.  $\frac{-\sqrt{3}}{2}$
- \_\_\_\_ 16. Find  $\sin \theta$  if  $\csc \theta = \frac{-23}{19}$ .
- a.  $\frac{4}{23}$
  - b.  $\frac{4}{19}$
  - c.  $\frac{-4}{23}$
  - d.  $\frac{19}{23}$
  - e.  $\frac{-19}{23}$

## McKeague/Turner Trigonometry 8e - Chapter 2 Form A

\_\_\_\_ 17. Find  $\tan \theta$  if  $\sec \theta = \frac{\sqrt{170}}{7}$  and  $\csc \theta = \frac{\sqrt{170}}{11}$ .

a.  $-\frac{7}{11}$

d.  $\frac{77}{170}$

b.  $\frac{170}{77}$

e.  $\frac{11}{7}$

c.  $\frac{7}{11}$

\_\_\_\_ 18. If  $\sin \theta = \frac{-6}{\sqrt{85}}$  and  $\theta$  terminates in QIII, find  $\cos \theta$ .

a.  $\frac{-6}{7}$

d.  $\frac{-\sqrt{85}}{49}$

b.  $\frac{-7}{\sqrt{85}}$

e.  $\frac{6}{7}$

c.  $\frac{7}{\sqrt{85}}$

## McKeague/Turner Trigonometry 8e - Chapter 2 Form A

\_\_\_\_ 19. Suppose  $\csc \theta = 7$  and  $\theta$  terminates in QII. Find the remaining trigonometric ratios of  $\theta$ .

a.  $\sin \theta = \frac{1}{7}$

$$\cos \theta = \frac{4\sqrt{3}}{7}$$

$$\tan \theta = \frac{1}{4\sqrt{3}}$$

$$\sec \theta = \frac{7}{4\sqrt{3}}$$

$$\cot \theta = 4\sqrt{3}$$

b.  $\sin \theta = \frac{1}{7}$

$$\cos \theta = \frac{-4\sqrt{3}}{7}$$

$$\tan \theta = -4\sqrt{3}$$

$$\sec \theta = \frac{-7}{4\sqrt{3}}$$

$$\cot \theta = \frac{-1}{4\sqrt{3}}$$

c.  $\sin \theta = \frac{-4\sqrt{3}}{7}$

$$\cos \theta = \frac{1}{7}$$

$$\tan \theta = \frac{-1}{4\sqrt{3}}$$

$$\sec \theta = \frac{-7}{4\sqrt{3}}$$

$$\cot \theta = -4\sqrt{3}$$

d.  $\sin \theta = \frac{-4\sqrt{3}}{7}$

$$\cos \theta = \frac{1}{7}$$

$$\tan \theta = -4\sqrt{3}$$

$$\sec \theta = \frac{-7}{4\sqrt{3}}$$

$$\cot \theta = \frac{-1}{4\sqrt{3}}$$

e.  $\sin \theta = \frac{1}{7}$

$$\cos \theta = \frac{-4\sqrt{3}}{7}$$

$$\tan \theta = \frac{-1}{4\sqrt{3}}$$

$$\sec \theta = \frac{-7}{4\sqrt{3}}$$

$$\cot \theta = -4\sqrt{3}$$



## McKeague/Turner Trigonometry 8e - Chapter 2 Form A

\_\_\_\_ 20. If  $\csc \theta = -11$ , find  $\csc^3 \theta$ .

a. 1,331

d.  $\frac{-1}{1,331}$

b.  $\frac{-1}{33}$

e. -1,331

c. -33

\_\_\_\_ 21. Use fundamental identities to simplify the expression below and then determine which of the following is *not* equivalent.

$$\sin \alpha (\csc \alpha - \sin \alpha)$$

a.  $1 - \sin^2 \alpha$

b.  $\frac{\csc^2 \alpha - 1}{\csc^2 \alpha}$

c.  $\frac{\csc^2 \alpha - \sec^2 \alpha + \tan^2 \alpha}{\csc^2 \alpha}$

d.  $1 - \cot^2 \alpha$

e.  $\cos^2 \alpha$

\_\_\_\_ 22. Multiply; then use fundamental identities to simplify the expression below and determine which of the following is *not* equivalent.

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

a.  $2 \sin^2 x - \sec^2 x - \tan^2 x$

b.  $\sin^2 x - \cos^2 x$

c.  $1 - 2 \cos^2 x$

d.  $\csc^2 x - \cot^2 x - 2 \cos^2 x$

e.  $1 - 2 \sin \left( \frac{\pi}{2} - x \right) \cos x$

\_\_\_\_ 23. Which of the following is equivalent to the given expression?

$$\frac{\sin^2 x}{1 - \cos x}$$

a.  $\tan x + \sin x$

b.  $1 + \cos x$

c.  $\csc x + \cot x$

d.  $\tan x \cot x - \cos x$

e.  $\cot x \sin x + \tan x$

## McKeague/Turner Trigonometry 8e - Chapter 2 Form A

\_\_\_\_ 24. Simplify the expression  $\sqrt{x^2 + 13}$  as much as possible after substituting  $\sqrt{13} \tan \theta$  for  $x$ .

a.  $\sqrt{13} |\csc \theta|$

d.  $13 |\csc \theta|$

b.  $\sqrt{13} |\sin \theta|$

e.  $13 |\sec \theta|$

c.  $\sqrt{13} |\sec \theta|$

\_\_\_\_ 25. Simplify the expression  $\sqrt{30 - 6x^2}$  as much as possible after substituting  $\sqrt{5} \sin \theta$  for  $x$ .

a.  $30 |\csc \theta|$

d.  $30 |\cos \theta|$

b.  $\sqrt{30} |\csc \theta|$

e.  $\sqrt{30} |\cos \theta|$

c.  $\sqrt{30} |\tan \theta|$

## McKeague/Turner Trigonometry 8e - Chapter 2 Form A

### Answer Section

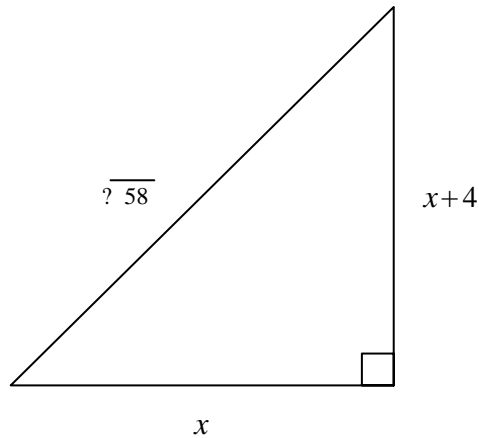
1. E
2. D
3. B
4. C
5. A
6. B
7. B
8. D
9. B
10. C
11. D
12. C
13. E
14. D
15. E
16. E
17. E
18. B
19. E
20. E
21. D
22. A
23. B
24. C
25. E

## McKeague/Turner Trigonometry 8e - Chapter 2 Form B

### Multiple Choice

Identify the choice that best completes the statement or answers the question.

- \_\_\_\_\_ 1. Find the complement and supplement of the angle  $59^\circ$ .
- |  |   |
|--|---|
| a. Complement: $31^\circ$<br>Supplement: $121^\circ$ | d. Complement: $149^\circ$<br>Supplement: $239^\circ$ |
| b. Complement: $121^\circ$<br>Supplement: $31^\circ$ | e. Complement: $121^\circ$<br>Supplement: $301^\circ$ |
| c. Complement: $41^\circ$<br>Supplement: $141^\circ$ |   |
- \_\_\_\_\_ 2. Let triangle  $ABC$  be a right triangle with  $C = 90^\circ$ . If  $c = 19$  and  $a = 10$ , find  $b$ .
- |                 |                       |
|-----------------|-----------------------|
| a. 9            | d. $\sqrt{461}$       |
| b. $\sqrt{9}$   | e. None of the above. |
| c. $3\sqrt{29}$ |                       |
- \_\_\_\_\_ 3. Solve for  $x$  in the following right triangle:



- |      |      |
|------|------|
| a. 6 | d. 5 |
| b. 4 | e. 3 |
| c. 2 |      |

## McKeague/Turner Trigonometry 8e - Chapter 2 Form B

\_\_\_\_\_ 4. Find the lengths of the shortest two sides of a  $30^\circ - 60^\circ - 90^\circ$  triangle, if the length of the longest side is 24.

a.  $6, 6\sqrt{3}$

d.  $12, \frac{12}{\sqrt{3}}$

b.  $6, \frac{6}{\sqrt{3}}$

e.  $12, 12\sqrt{3}$

c.  $6, \frac{12}{\sqrt{3}}$

\_\_\_\_\_ 5. Find the length of the shorter sides of a  $45^\circ - 45^\circ - 90^\circ$  triangle if the length of the hypotenuse is 17.

a.  $\frac{17\sqrt{2}}{4}$

d.  $\frac{17\sqrt{3}}{3}$

b.  $\frac{17\sqrt{2}}{2}$

e.  $\frac{17}{2}$

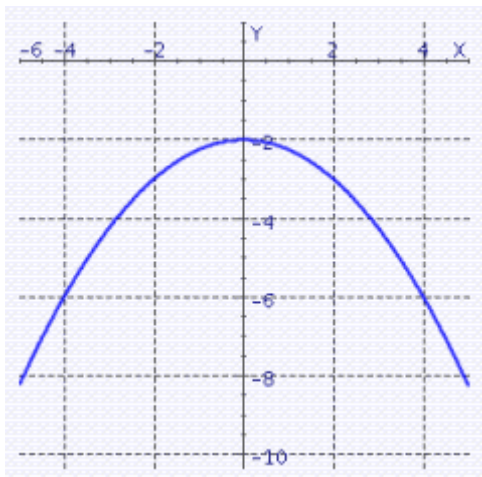
c.  $\frac{17\sqrt{3}}{2}$

## McKeague/Turner Trigonometry 8e - Chapter 2 Form B

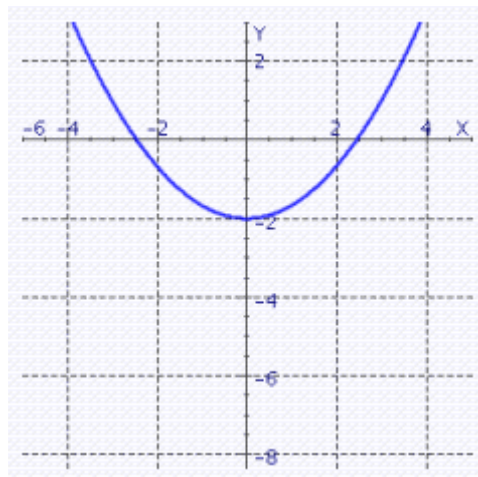
\_\_\_\_\_ 6. Graph the following parabola.

$$f(x) = -\frac{1}{3}x^2 - 2$$

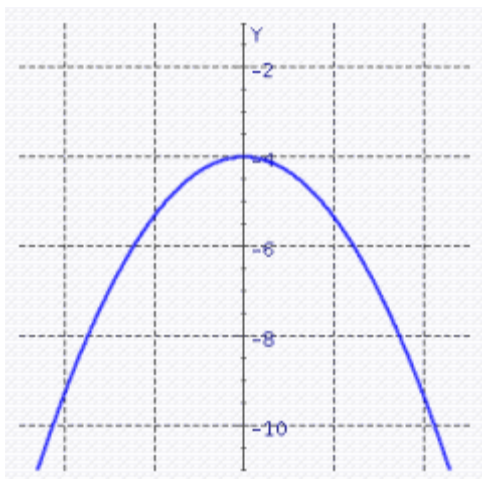
a.



d.

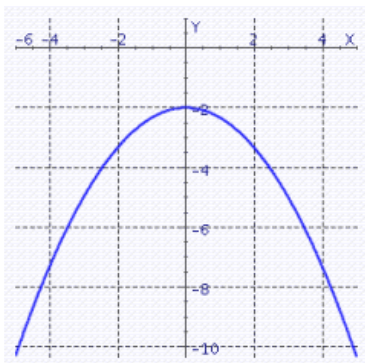


b.



e. None of the above.

c.



## McKeague/Turner Trigonometry 8e - Chapter 2 Form B

- \_\_\_\_ 7. Find the distance between the two points  $(-7, -5)$  and  $(5, 11)$ .
- 40
  - 20
  - 17
  - 60
  - 37
- \_\_\_\_ 8. Determine two coterminal angles (one positive and one negative) for  $\theta = -506^\circ$ .
- $124^\circ, -236^\circ$
  - $304^\circ, -416^\circ$
  - $124^\circ, -326^\circ$
  - $214^\circ, -146^\circ$
  - $214^\circ, -326^\circ$
- \_\_\_\_ 9. Determine which of the following points is located in quadrant 4.
- |               |              |
|---------------|--------------|
| a. $(-6, -4)$ | d. $(4, -6)$ |
| b. $(-4, 6)$  | e. $(-6, 4)$ |
| c. $(6, 4)$   |              |
- \_\_\_\_ 10. Which of the following points lies on the unit circle?
- $\left(\frac{9}{13}, \frac{-2\sqrt{10}}{13}\right)$
  - $\left(\frac{-7}{11}, \frac{2\sqrt{10}}{11}\right)$
  - $\left(\frac{9}{11}, \frac{2\sqrt{10}}{11}\right)$
  - $\left(\frac{7}{15}, \frac{2\sqrt{10}}{15}\right)$
  - None of the above.

## McKeague/Turner Trigonometry 8e - Chapter 2 Form B

\_\_\_\_ 11. Given  $\sin 30^\circ = \frac{1}{2}$  and  $\cos 30^\circ = \frac{\sqrt{3}}{2}$ , determine the following:

$\tan 30^\circ$

a.  $\tan 30^\circ = \sqrt{3}$

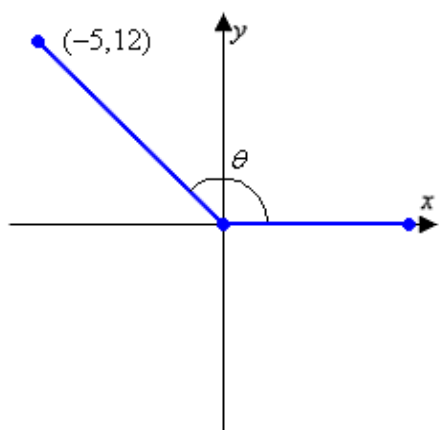
b.  $\tan 30^\circ = 1$

c.  $\tan 30^\circ = \frac{\sqrt{2}}{2}$

d.  $\tan 30^\circ = \frac{\sqrt{3}}{3}$

e. undefined

\_\_\_\_ 12. Given the figure below, determine the value of  $\sin \theta$ .



a.  $\sin \theta = -\frac{5}{13}$

b.  $\sin \theta = \frac{12}{5}$

c.  $\sin \theta = \frac{12}{13}$

d.  $\sin \theta = -\frac{5}{12}$

e.  $\sin \theta = \frac{5}{12}$



## McKeague/Turner Trigonometry 8e - Chapter 2 Form B

\_\_\_\_\_ 13. The point  $(5, 12)$  is on the terminal side of an angle in standard position. Determine the exact value of  $\sec \theta$ .

a.  $\sec \theta = -\frac{5}{13}$

b.  $\sec \theta = \frac{5}{12}$

c.  $\sec \theta = \frac{12}{5}$

d.  $\sec \theta = -\frac{5}{12}$

e.  $\sec \theta = \frac{13}{5}$

\_\_\_\_\_ 14. Indicate the two quadrants  $\theta$  could terminate in if  $\tan \theta = -\frac{21}{31}$ .

a. Quadrants I and III

b. Quadrants II and III

c. Quadrants I and IV

d. Quadrants II and IV

e. Quadrants III and IV

\_\_\_\_\_ 15. Evaluate  $\sin 150^\circ$ .

a.  $\frac{\sqrt{2}}{2}$

b.  $\frac{\sqrt{3}}{2}$

c.  $-\frac{\sqrt{3}}{2}$

d.  $\frac{1}{2}$

e.  $-\frac{1}{2}$

\_\_\_\_\_ 16. Find  $\sin \theta$  if  $\csc \theta = \frac{-19}{17}$ .

a.  $-\frac{17}{19}$

b.  $-\frac{2}{19}$

c.  $\frac{17}{19}$

d.  $\frac{2}{19}$

e.  $\frac{2}{17}$

## McKeague/Turner Trigonometry 8e - Chapter 2 Form B

\_\_\_\_ 17. Find  $\tan \theta$  if  $\sec \theta = \frac{\sqrt{218}}{7}$  and  $\csc \theta = \frac{\sqrt{218}}{13}$ .

a.  $\frac{218}{91}$

d.  $-\frac{7}{13}$

b.  $\frac{13}{7}$

e.  $\frac{91}{218}$

c.  $\frac{7}{13}$

\_\_\_\_ 18. If  $\sin \theta = \frac{-6}{\sqrt{85}}$  and  $\theta$  terminates in QIV, find  $\cos \theta$ .

a.  $\frac{-6}{7}$

d.  $\frac{6}{7}$

b.  $\frac{-7}{\sqrt{85}}$

e.  $\frac{\sqrt{85}}{49}$

c.  $\frac{7}{\sqrt{85}}$

## McKeague/Turner Trigonometry 8e - Chapter 2 Form B

\_\_\_\_ 19. Suppose  $\csc \theta = 15$  and  $\theta$  terminates in QII. Find the remaining trigonometric ratios of  $\theta$ .

a.  $\sin \theta = \frac{-4\sqrt{14}}{15}$

$\cos \theta = \frac{1}{15}$

$\tan \theta = \frac{-1}{4\sqrt{14}}$

$\sec \theta = \frac{-15}{4\sqrt{14}}$

$\cot \theta = -4\sqrt{14}$

b.  $\sin \theta = \frac{1}{15}$

$\cos \theta = \frac{4\sqrt{14}}{15}$

$\tan \theta = \frac{1}{4\sqrt{14}}$

$\sec \theta = \frac{15}{4\sqrt{14}}$

$\cot \theta = 4\sqrt{14}$

c.  $\sin \theta = \frac{1}{15}$

$\cos \theta = \frac{-4\sqrt{14}}{15}$

$\tan \theta = -4\sqrt{14}$

$\sec \theta = \frac{-15}{4\sqrt{14}}$

$\cot \theta = \frac{-1}{4\sqrt{14}}$

d.  $\sin \theta = \frac{-4\sqrt{14}}{15}$

$\cos \theta = \frac{1}{15}$

$\tan \theta = -4\sqrt{14}$

$\sec \theta = \frac{-15}{4\sqrt{14}}$

$\cot \theta = \frac{-1}{4\sqrt{14}}$

e.  $\sin \theta = \frac{1}{15}$

$\cos \theta = \frac{-4\sqrt{14}}{15}$

$\tan \theta = \frac{-1}{4\sqrt{14}}$

$\sec \theta = \frac{-15}{4\sqrt{14}}$

$\cot \theta = -4\sqrt{14}$

\_\_\_\_ 20. If  $\csc \theta = -12$ , find  $\csc^3 \theta$ .

a.  $\frac{-1}{36}$

b.  $\frac{-1}{1,728}$

c.  $-1,728$

d.  $-36$

e.  $1,728$

## McKeague/Turner Trigonometry 8e - Chapter 2 Form B

- \_\_\_\_ 21. Use fundamental identities to simplify the expression below and then determine which of the following is *not* equivalent.

$$\sin \alpha (\csc \alpha - \sin \alpha)$$

- a.  $1 - \sin^2 \alpha$
- b.  $\frac{\csc^2 \alpha - 1}{\csc^2 \alpha}$
- c.  $\frac{\csc^2 \alpha - \sec^2 \alpha + \tan^2 \alpha}{\csc^2 \alpha}$
- d.  $1 - \cot^2 \alpha$
- e.  $\cos^2 \alpha$

- \_\_\_\_ 22. Multiply; then use fundamental identities to simplify the expression below and determine which of the following is *not* equivalent.

$$(\tan x + 1)^2$$

- a.  $\tan^2 x + 1$
- b.  $\sec^2 x + 2 \tan x$
- c.  $\frac{1 + 2 \sin x \cos x}{\cos^2 x}$
- d.  $\tan^2 x + 2 \tan x + 1$
- e.  $\sec^2 x (1 + 2 \sin x \cos x)$

- \_\_\_\_ 23. Which of the following is equivalent to the given expression?

$$\frac{\sin^2 x}{1 - \cos x}$$

- a.  $\tan x + \sin x$
- b.  $1 + \cos x$
- c.  $\csc x + \cot x$
- d.  $\tan x \cot x - \cos x$
- e.  $\cot x \sin x + \tan x$

- \_\_\_\_ 24. Simplify the expression  $\sqrt{x^2 + 6}$  as much as possible after substituting  $\sqrt{6} \tan \theta$  for  $x$ .

- a.  $6|\sec \theta|$
- b.  $\sqrt{6}|\sec \theta|$
- c.  $\sqrt{6}|\sin \theta|$
- d.  $6|\csc \theta|$
- e.  $\sqrt{6}|\csc \theta|$

## McKeague/Turner Trigonometry 8e - Chapter 2 Form B

\_\_\_\_ 25. Simplify the expression  $\sqrt{70 - 7x^2}$  as much as possible after substituting  $\sqrt{10} \sin \theta$  for  $x$ .

a.  $\sqrt{70} |\tan \theta|$

d.  $\sqrt{70} |\csc \theta|$

b.  $\sqrt{70} |\cos \theta|$

e.  $70 |\csc \theta|$

c.  $70 |\cos \theta|$

## McKeague/Turner Trigonometry 8e - Chapter 2 Form B

### Answer Section

1. A
2. C
3. E
4. E
5. B
6. C
7. B
8. D
9. D
10. C
11. D
12. C
13. E
14. D
15. D
16. A
17. B
18. C
19. E
20. C
21. D
22. A
23. B
24. B
25. B

## McKeague/Turner Trigonometry 8e - Chapter 2 Form C

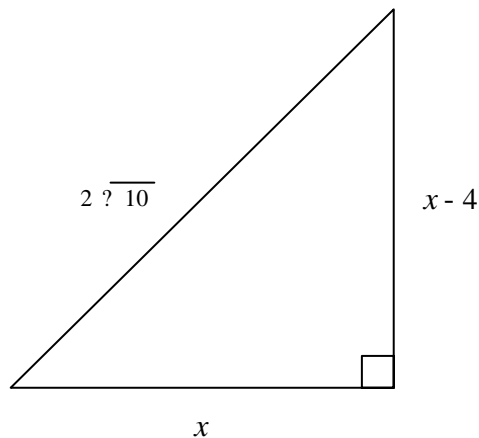
### Multiple Choice/Short Answer

Identify the choice that best completes the statement or answers the question/Use the space provided to write your answer.

- \_\_\_\_ 1. Find the complement and supplement of the angle  $54^\circ$ .
- |  |   |
|--|---|
| a. Complement: $36^\circ$<br>Supplement: $126^\circ$ | d. Complement: $144^\circ$<br>Supplement: $234^\circ$ |
| b. Complement: $126^\circ$<br>Supplement: $36^\circ$ | e. Complement: $126^\circ$<br>Supplement: $306^\circ$ |
| c. Complement: $46^\circ$<br>Supplement: $146^\circ$ |   |
2. Determine two coterminal angles (one positive and one negative) for  $\theta = -457^\circ$ .

- \_\_\_\_ 3. Let triangle  $ABC$  be a right triangle with  $C = 90^\circ$ . If  $c = 19$  and  $a = 6$ , find  $b$ .
- |                 |                       |
|-----------------|-----------------------|
| a. $\sqrt{13}$  | d. $5\sqrt{13}$       |
| b. $\sqrt{397}$ | e. None of the above. |
| c. 13           |                       |

- \_\_\_\_ 4. Solve for  $x$  in the following right triangle:



- |      |      |
|------|------|
| a. 9 | d. 8 |
| b. 6 | e. 7 |
| c. 5 |      |

## McKeague/Turner Trigonometry 8e - Chapter 2 Form C

\_\_\_\_\_ 5. Find the lengths of the shortest two sides of a  $30^\circ - 60^\circ - 90^\circ$  triangle, if the length of the longest side is 16.

a.  $4, \frac{8}{\sqrt{3}}$

d.  $4, \frac{4}{\sqrt{3}}$

b.  $4, 4\sqrt{3}$

e.  $8, \frac{8}{\sqrt{3}}$

c.  $8, 8\sqrt{3}$

\_\_\_\_\_ 6. Find the length of the shorter sides of a  $45^\circ - 45^\circ - 90^\circ$  triangle if the length of the hypotenuse is 21.

a.  $\frac{21\sqrt{2}}{2}$

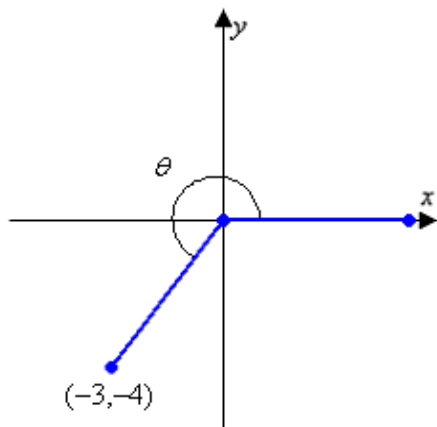
d.  $\frac{21\sqrt{3}}{3}$

b.  $\frac{21\sqrt{2}}{4}$

e.  $\frac{21\sqrt{3}}{2}$

c.  $\frac{21}{2}$

7. Given the figure below, determine the value of  $\sin \theta$ .



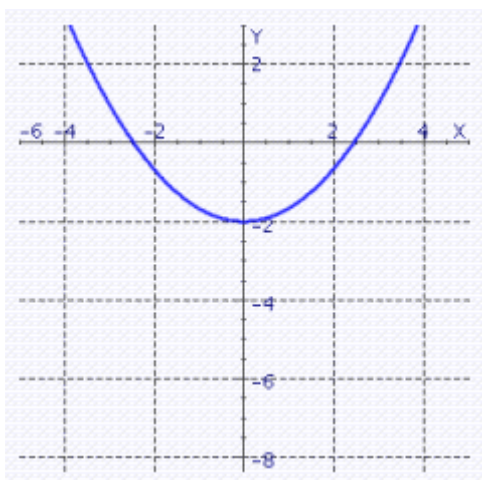


## McKeague/Turner Trigonometry 8e - Chapter 2 Form C

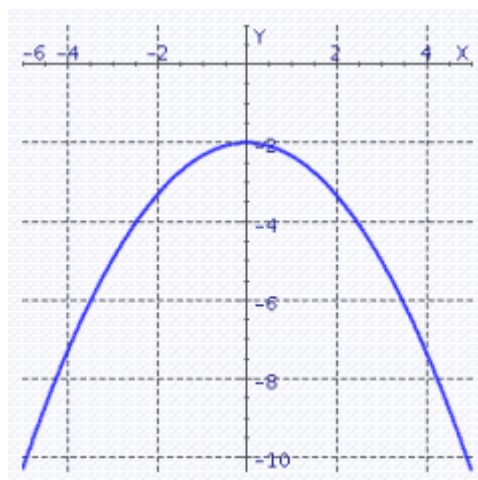
\_\_\_\_\_ 8. Graph the following parabola.

$$f(x) = -\frac{1}{3}x^2 - 2$$

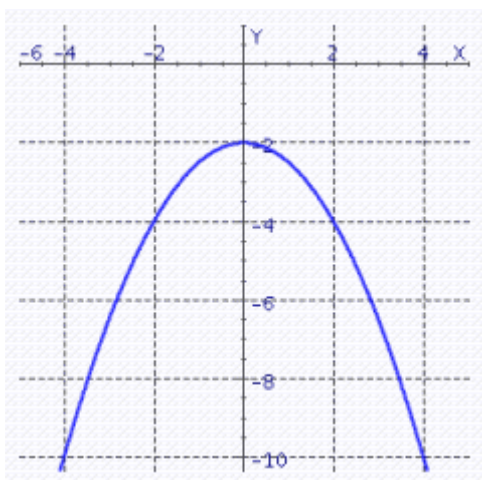
a.



d.

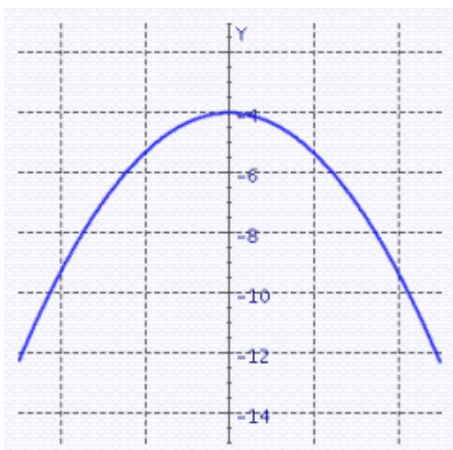


b.



e. None of the above.

c.



## McKeague/Turner Trigonometry 8e - Chapter 2 Form C

\_\_\_\_\_ 9. Find the distance between the two points  $(-5, 8)$  and  $(19, 53)$ .

- a. 102
- b. 51
- c. 48
- d. 153
- e. 99

\_\_\_\_\_ 10. Determine which of the following points is located in quadrant 4.

- a.  $(-6, 3)$
- b.  $(-3, 6)$
- c.  $(3, 6)$
- d.  $(-3, -6)$
- e.  $(6, -3)$

\_\_\_\_\_ 11. Which of the following points lies on the unit circle?

- a.  $\left(\frac{-5}{13}, \frac{-4\sqrt{2}}{13}\right)$
- b.  $\left(\frac{-7}{11}, \frac{4\sqrt{2}}{11}\right)$
- c.  $\left(\frac{5}{9}, \frac{-4\sqrt{2}}{9}\right)$
- d.  $\left(\frac{-7}{9}, \frac{-4\sqrt{2}}{9}\right)$
- e. None of the above.

12. Given  $\sin 30^\circ = \frac{1}{2}$  and  $\cos 30^\circ = \frac{\sqrt{3}}{2}$ , determine the following:

$\sec 30^\circ$

## McKeague/Turner Trigonometry 8e - Chapter 2 Form C

\_\_\_\_\_ 13. Indicate the two quadrants  $\theta$  could terminate in if  $\tan \theta = -\frac{17}{25}$ .

- a. Quadrants III and IV
- b. Quadrants I and III
- c. Quadrants I and IV
- d. Quadrants II and III
- e. Quadrants II and IV

\_\_\_\_\_ 14. Evaluate  $\sin 300^\circ$ .

- a.  $\frac{1}{2}$
- b.  $\frac{-\sqrt{2}}{2}$
- c.  $\frac{-1}{2}$
- d.  $\frac{-\sqrt{3}}{2}$
- e.  $\frac{\sqrt{3}}{2}$

\_\_\_\_\_ 15. Find  $\sin \theta$  if  $\csc \theta = \frac{-19}{17}$ .

- a.  $\frac{-2}{19}$
- b.  $\frac{-17}{19}$
- c.  $\frac{17}{19}$
- d.  $\frac{2}{17}$
- e.  $\frac{2}{19}$

\_\_\_\_\_ 16. Find  $\tan \theta$  if  $\sec \theta = \frac{\sqrt{290}}{11}$  and  $\csc \theta = \frac{\sqrt{290}}{13}$ .

- a.  $-\frac{11}{13}$
- b.  $\frac{13}{11}$
- c.  $\frac{290}{143}$
- d.  $\frac{143}{290}$
- e.  $\frac{11}{13}$

\_\_\_\_\_ 17. Multiply; then use fundamental identities to simplify the expression below and determine which of the following is *not* equivalent.

$$(2 - 2\cos x)(2 + 2\cos x)$$

- a.  $4 - \cos^2 x$
- b.  $4 - 4\cos^2 x$
- c.  $4\sin^2 x$
- d.  $\frac{4}{\csc^2 x}$
- e.  $\frac{4}{1 + \cot^2 x}$

## McKeague/Turner Trigonometry 8e - Chapter 2 Form C

\_\_\_\_\_ 18. If  $\sin \theta = \frac{-8}{\sqrt{89}}$  and  $\theta$  terminates in QIV, find  $\cos \theta$ .

a.  $\frac{5}{8}$

b.  $\frac{-5}{8}$

c.  $\frac{-5}{\sqrt{89}}$

d.  $\frac{5}{\sqrt{89}}$

e.  $\frac{\sqrt{89}}{25}$

19. The point  $(7, 24)$  is on the terminal side of an angle in standard position. Determine the exact value of  $\sin \theta$ .

## McKeague/Turner Trigonometry 8e - Chapter 2 Form C

\_\_\_\_ 20. Suppose  $\csc \theta = 7$  and  $\theta$  terminates in QII. Find the remaining trigonometric ratios of  $\theta$ .

a.  $\sin \theta = \frac{1}{7}$

$$\cos \theta = \frac{4\sqrt{3}}{7}$$

$$\tan \theta = \frac{1}{4\sqrt{3}}$$

$$\sec \theta = \frac{7}{4\sqrt{3}}$$

$$\cot \theta = 4\sqrt{3}$$

b.  $\sin \theta = \frac{1}{7}$

$$\cos \theta = \frac{-4\sqrt{3}}{7}$$

$$\tan \theta = \frac{-1}{4\sqrt{3}}$$

$$\sec \theta = \frac{-7}{4\sqrt{3}}$$

$$\cot \theta = -4\sqrt{3}$$

c.  $\sin \theta = \frac{-4\sqrt{3}}{7}$

$$\cos \theta = \frac{1}{7}$$

$$\tan \theta = -4\sqrt{3}$$

$$\sec \theta = \frac{-7}{4\sqrt{3}}$$

$$\cot \theta = \frac{-1}{4\sqrt{3}}$$

d.  $\sin \theta = \frac{-4\sqrt{3}}{7}$

$$\cos \theta = \frac{1}{7}$$

$$\tan \theta = \frac{-1}{4\sqrt{3}}$$

$$\sec \theta = \frac{-7}{4\sqrt{3}}$$

$$\cot \theta = -4\sqrt{3}$$

e.  $\sin \theta = \frac{1}{7}$

$$\cos \theta = \frac{-4\sqrt{3}}{7}$$

$$\tan \theta = -4\sqrt{3}$$

$$\sec \theta = \frac{-7}{4\sqrt{3}}$$

$$\cot \theta = \frac{-1}{4\sqrt{3}}$$

\_\_\_\_ 21. If  $\csc \theta = -14$ , find  $\csc^3 \theta$ .

a.  $\frac{-1}{42}$

b.  $\frac{-1}{2,744}$

c. 2,744

d. -2,744

e. -42

## McKeague/Turner Trigonometry 8e - Chapter 2 Form C

- \_\_\_\_ 22. Use fundamental identities to simplify the expression below and then determine which of the following is *not* equivalent.

$$\sec \phi \left( \frac{\sin \phi}{\tan \phi} \right)$$

- a.  $\sec^2 \phi - \tan^2 \phi$
- b.  $\sin^2 \phi + \cos^2 \phi$
- c.  $\csc^2 \phi - \cot^2 \phi$
- d.  $\cos^2 \phi - \sin^2 \phi$
- e. 1

- \_\_\_\_ 23. Simplify the expression  $\sqrt{x^2 + 11}$  as much as possible after substituting  $\sqrt{11} \tan \theta$  for  $x$ .

- a.  $\sqrt{11} |\sec \theta|$
- b.  $11 |\sec \theta|$
- c.  $\sqrt{11} |\csc \theta|$
- d.  $\sqrt{11} |\sin \theta|$
- e.  $11 |\csc \theta|$

- \_\_\_\_ 24. Simplify the expression  $\sqrt{30 - 10x^2}$  as much as possible after substituting  $\sqrt{3} \sin \theta$  for  $x$ .

- a.  $30 |\cos \theta|$
- b.  $\sqrt{30} |\cos \theta|$
- c.  $\sqrt{30} |\csc \theta|$
- d.  $\sqrt{30} |\tan \theta|$
- e.  $30 |\csc \theta|$

25. Which of the following is equivalent to the given expression?

$$\frac{\cot^2 x}{\csc x + 1}$$

## McKeague/Turner Trigonometry 8e - Chapter 2 Form C

### Answer Section

1. A
2.  $263^\circ, -97^\circ$
3. D
4. B
5. C
6. A
7.  $\sin \theta = -\frac{4}{5}$
8. D
9. B
10. E
11. D
12.  $\sec 30^\circ = \frac{2\sqrt{3}}{3}$
13. E
14. D
15. B
16. B
17. A
18. D
19.  $\sin \theta = \frac{24}{25}$
20. B
21. D
22. D
23. A
24. B
25.  $\csc x - 1$

## McKeague/Turner Trigonometry 8e - Chapter 2 Form D

### Multiple Choice/Short Answer

Identify the choice that best completes the statement or answers the question/Use the space provided to write your answer.

1. Determine two coterminal angles (one positive and one negative) for  $\theta = -477^\circ$ .

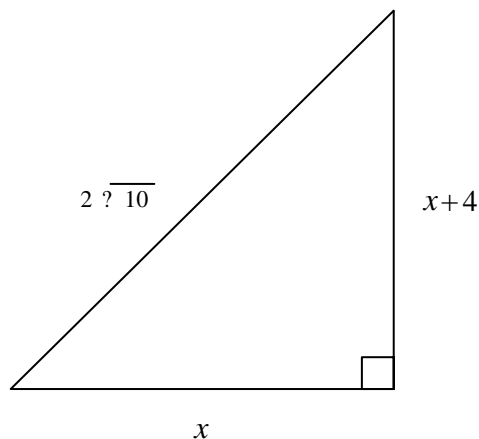
2. Find the complement and supplement of the angle  $59^\circ$ .

- |   |  |
|---|--|
| a. Complement: $121^\circ$<br>Supplement: $301^\circ$ | d. Complement: $121^\circ$<br>Supplement: $31^\circ$ |
| b. Complement: $41^\circ$<br>Supplement: $141^\circ$  | e. Complement: $31^\circ$<br>Supplement: $121^\circ$ |
| c. Complement: $149^\circ$<br>Supplement: $239^\circ$ |  |

3. Let triangle  $ABC$  be a right triangle with  $C = 90^\circ$ . If  $c = 19$  and  $a = 2$ , find  $b$ .

- |                 |                       |
|-----------------|-----------------------|
| a. 17           | d. $\sqrt{17}$        |
| b. $\sqrt{365}$ | e. None of the above. |
| c. $\sqrt{357}$ |                       |

4. Solve for  $x$  in the following right triangle:



- |      |      |
|------|------|
| a. 1 | d. 3 |
| b. 5 | e. 2 |
| c. 4 |      |



## McKeague/Turner Trigonometry 8e - Chapter 2 Form D

\_\_\_\_\_ 5. Find the lengths of the shortest two sides of a  $30^\circ - 60^\circ - 90^\circ$  triangle, if the length of the longest side is 16.

a.  $4, \frac{4}{\sqrt{3}}$

b.  $4, 4\sqrt{3}$

c.  $8, 8\sqrt{3}$

d.  $4, \frac{8}{\sqrt{3}}$

e.  $8, \frac{8}{\sqrt{3}}$

6. The point  $(8, 15)$  is on the terminal side of an angle in standard position. Determine the exact value of  $\cot \theta$ .

\_\_\_\_\_ 7. Find the length of the shorter sides of a  $45^\circ - 45^\circ - 90^\circ$  triangle if the length of the hypotenuse is 17.

a.  $\frac{17\sqrt{3}}{3}$

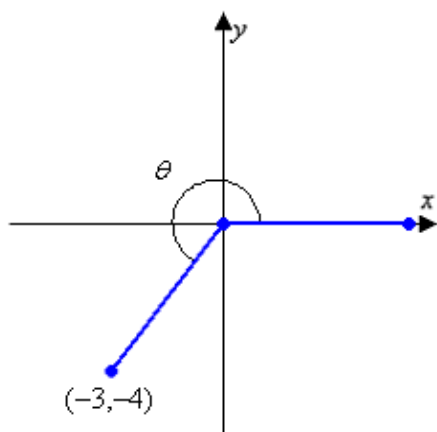
b.  $\frac{17\sqrt{3}}{2}$

c.  $\frac{17}{2}$

d.  $\frac{17\sqrt{2}}{4}$

e.  $\frac{17\sqrt{2}}{2}$

8. Given the figure below, determine the value of  $\sin \theta$ .

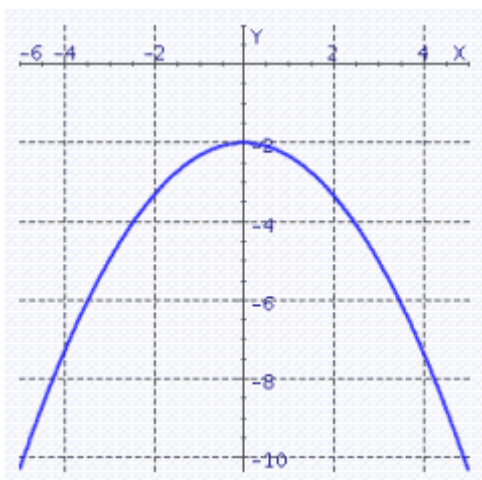


## McKeague/Turner Trigonometry 8e - Chapter 2 Form D

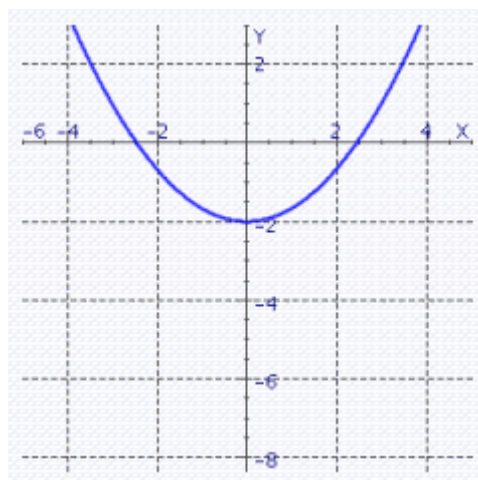
\_\_\_\_ 9. Graph the following parabola.

$$f(x) = -\frac{1}{3}x^2 - 2$$

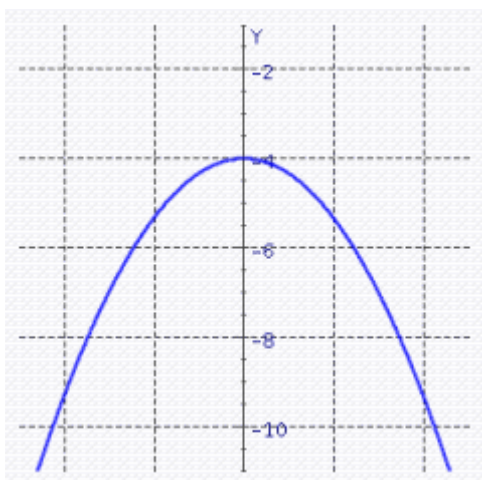
a.



d.

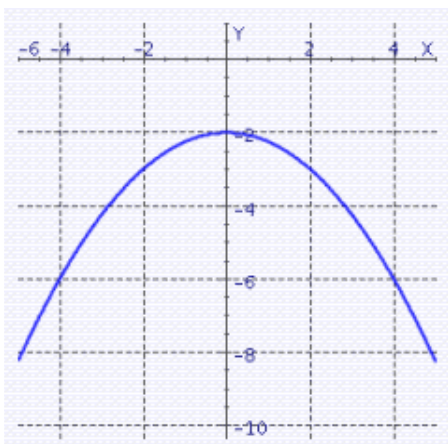


b.



e. None of the above.

c.



## McKeague/Turner Trigonometry 8e - Chapter 2 Form D

\_\_\_\_\_ 10. Determine which of the following points is located in quadrant 4.

- a.  $(6, 4)$
- b.  $(-6, -4)$
- c.  $(4, -6)$
- d.  $(-6, 4)$
- e.  $(-4, 6)$

\_\_\_\_\_ 11. Find  $\tan \theta$  if  $\sec \theta = \frac{\sqrt{530}}{13}$  and  $\csc \theta = \frac{\sqrt{530}}{19}$ .

- a.  $\frac{530}{247}$
- b.  $\frac{13}{19}$
- c.  $\frac{19}{13}$
- d.  $-\frac{13}{19}$
- e.  $\frac{247}{530}$

\_\_\_\_\_ 12. Which of the following points lies on the unit circle?

- a.  $\left( \frac{-7}{11}, \frac{2\sqrt{10}}{11} \right)$
- b.  $\left( \frac{7}{15}, \frac{2\sqrt{10}}{15} \right)$
- c.  $\left( \frac{9}{11}, \frac{2\sqrt{10}}{11} \right)$
- d.  $\left( \frac{9}{13}, \frac{-2\sqrt{10}}{13} \right)$
- e. None of the above.

13. Given  $\sin 30^\circ = \frac{1}{2}$  and  $\cos 30^\circ = \frac{\sqrt{3}}{2}$ , determine the following:  
 $\csc 30^\circ$

## McKeague/Turner Trigonometry 8e - Chapter 2 Form D

\_\_\_\_ 14. Which of the following is equivalent to the given expression?

$$\frac{\cos^2 x}{1 + \sin x}$$

- a.  $\tan x + \cos x$
- b.  $1 - \sin x$
- c.  $\csc x + \cot x$
- d.  $\tan x \cot x - \sin x$
- e.  $\cot x \cos x + \tan x$

\_\_\_\_ 15. Evaluate  $\sin 240^\circ$ .

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

b.  $\frac{1}{2}$

c.  $\frac{-1}{2}$

d.  $\frac{-\sqrt{3}}{2}$

e.  $\frac{\sqrt{3}}{2}$

\_\_\_\_ 16. Indicate the two quadrants  $\theta$  could terminate in if  $\tan \theta = -\frac{21}{31}$ .

- a. Quadrants I and III
- b. Quadrants II and IV
- c. Quadrants I and IV

- d. Quadrants II and III
- e. Quadrants III and IV

\_\_\_\_ 17. Find  $\sin \theta$  if  $\csc \theta = \frac{-17}{13}$ .

a.  $\frac{13}{17}$

b.  $\frac{-4}{17}$

c.  $\frac{-13}{17}$

d.  $\frac{4}{13}$

e.  $\frac{4}{17}$

\_\_\_\_ 18. Multiply; then use fundamental identities to simplify the expression below and determine which of the following is *not* equivalent.

$$(\tan x + 1)^2$$

a.  $\tan^2 x + 1$

b.  $\sec^2 x + 2 \tan x$

c.  $\frac{1 + 2 \sin x \cos x}{\cos^2 x}$

d.  $\tan^2 x + 2 \tan x + 1$

e.  $\sec^2 x(1 + 2 \sin x \cos x)$

## McKeague/Turner Trigonometry 8e - Chapter 2 Form D

\_\_\_\_ 19. If  $\sin \theta = \frac{-6}{\sqrt{85}}$  and  $\theta$  terminates in QIV, find  $\cos \theta$ .

a.  $\frac{7}{\sqrt{85}}$

d.  $\frac{-7}{\sqrt{85}}$

b.  $\frac{6}{7}$

e.  $\frac{-6}{7}$

c.  $\frac{\sqrt{85}}{49}$

\_\_\_\_ 20. Find the distance between the two points  $(-7, -4)$  and  $(41, 16)$ .

a. 104

b. 52

c. 49

d. 156

e. 101

## McKeague/Turner Trigonometry 8e - Chapter 2 Form D

\_\_\_\_ 21. Suppose  $\csc \theta = 9$  and  $\theta$  terminates in QII. Find the remaining trigonometric ratios of  $\theta$ .

a.  $\sin \theta = \frac{1}{9}$

$$\cos \theta = \frac{4\sqrt{5}}{9}$$

$$\tan \theta = \frac{1}{4\sqrt{5}}$$

$$\sec \theta = \frac{9}{4\sqrt{5}}$$

$$\cot \theta = 4\sqrt{5}$$

b.  $\sin \theta = \frac{1}{9}$

$$\cos \theta = \frac{-4\sqrt{5}}{9}$$

$$\tan \theta = \frac{-1}{4\sqrt{5}}$$

$$\sec \theta = \frac{-9}{4\sqrt{5}}$$

$$\cot \theta = -4\sqrt{5}$$

c.  $\sin \theta = \frac{-4\sqrt{5}}{9}$

$$\cos \theta = \frac{1}{9}$$

$$\tan \theta = -4\sqrt{5}$$

$$\sec \theta = \frac{-9}{4\sqrt{5}}$$

$$\cot \theta = \frac{-1}{4\sqrt{5}}$$

d.  $\sin \theta = \frac{-4\sqrt{5}}{9}$

$$\cos \theta = \frac{1}{9}$$

$$\tan \theta = \frac{-1}{4\sqrt{5}}$$

$$\sec \theta = \frac{-9}{4\sqrt{5}}$$

$$\cot \theta = -4\sqrt{5}$$

e.  $\sin \theta = \frac{1}{9}$

$$\cos \theta = \frac{-4\sqrt{5}}{9}$$

$$\tan \theta = -4\sqrt{5}$$

$$\sec \theta = \frac{-9}{4\sqrt{5}}$$

$$\cot \theta = \frac{-1}{4\sqrt{5}}$$

## McKeague/Turner Trigonometry 8e - Chapter 2 Form D

\_\_\_\_ 22. If  $\csc \theta = -12$ , find  $\csc^3 \theta$ .

a. 1,728

b. -36

c.  $-\frac{1}{1,728}$

d. -1,728

e.  $-\frac{1}{36}$

\_\_\_\_ 23. Use fundamental identities to simplify the expression below and then determine which of the following is *not* equivalent.

$$\sin \alpha (\csc \alpha - \sin \alpha)$$

a.  $1 - \sin^2 \alpha$

b.  $\frac{\csc^2 \alpha - 1}{\csc^2 \alpha}$

c.  $\frac{\csc^2 \alpha - \sec^2 \alpha + \tan^2 \alpha}{\csc^2 \alpha}$

d.  $1 - \cot^2 \alpha$

e.  $\cos^2 \alpha$

\_\_\_\_ 24. Simplify the expression  $\sqrt{x^2 + 10}$  as much as possible after substituting  $\sqrt{10} \tan \theta$  for  $x$ .

a.  $\sqrt{10} |\csc \theta|$

b.  $\sqrt{10} |\sec \theta|$

c.  $10 |\sec \theta|$

d.  $10 |\csc \theta|$

e.  $\sqrt{10} |\sin \theta|$

\_\_\_\_ 25. Simplify the expression  $\sqrt{66 - 11x^2}$  as much as possible after substituting  $\sqrt{6} \sin \theta$  for  $x$ .

a.  $66 |\csc \theta|$

b.  $66 |\cos \theta|$

c.  $\sqrt{66} |\tan \theta|$

d.  $\sqrt{66} |\csc \theta|$

e.  $\sqrt{66} |\cos \theta|$

## McKeague/Turner Trigonometry 8e - Chapter 2 Form D

### Answer Section

1.  $243^\circ, -117^\circ$
2. E
3. C
4. E
5. C
6.  $\cot \theta = \frac{8}{15}$
7. E
8.  $\sin \theta = -\frac{4}{5}$
9. A
10. C
11. C
12. C
13.  $\csc 30^\circ = 2$
14. B
15. D
16. B
17. C
18. A
19. A
20. B
21. B
22. D
23. D
24. B
25. E



## McKeague/Turner Trigonometry 8e - Chapter 2 Form E

### Multiple Choice/Short Answer

Identify the choice that best completes the statement or answers the question/Use the space provided to write your answer.

- \_\_\_\_\_ 1. Use fundamental identities to simplify the expression below and then determine which of the following is *not* equivalent.

$$\csc \rho \tan \rho + \sec \rho$$

a.  $\frac{2 \tan \rho}{\sin \rho}$

b.  $\frac{\csc \rho \sin \rho + \sec \rho \cos \rho}{\cos \rho}$

c.  $\frac{\tan \rho \cos \rho + \sin \rho}{\sin \rho \cos \rho}$

d.  $2 \sin \rho$

e.  $\frac{2}{\cos \rho}$

- \_\_\_\_\_ 2. Find the complement and supplement of the angle  $59^\circ$ .

a. Complement:  $121^\circ$   
Supplement:  $31^\circ$

b. Complement:  $31^\circ$   
Supplement:  $121^\circ$

c. Complement:  $121^\circ$   
Supplement:  $301^\circ$

d. Complement:  $41^\circ$   
Supplement:  $141^\circ$

e. Complement:  $149^\circ$   
Supplement:  $239^\circ$

- \_\_\_\_\_ 3. Determine which of the following points is located in quadrant 4.

a.  $(-3, -6)$

b.  $(-6, 3)$

c.  $(3, 6)$

d.  $(-3, 6)$

e.  $(6, -3)$

## McKeague/Turner Trigonometry 8e - Chapter 2 Form E

\_\_\_\_\_ 4. Which of the following points lies on the unit circle?

a.  $\left( \frac{-7}{11}, \frac{-4\sqrt{2}}{11} \right)$

b.  $\left( \frac{-7}{9}, \frac{4\sqrt{2}}{9} \right)$

c.  $\left( \frac{5}{9}, \frac{4\sqrt{2}}{9} \right)$

d.  $\left( \frac{-5}{13}, \frac{4\sqrt{2}}{13} \right)$

e. None of the above.

\_\_\_\_\_ 5. Let triangle  $ABC$  be a right triangle with  $C = 90^\circ$ . If  $c = 19$  and  $a = 2$ , find  $b$ .

a.  $\sqrt{357}$

b.  $\sqrt{365}$

c.  $\sqrt{17}$

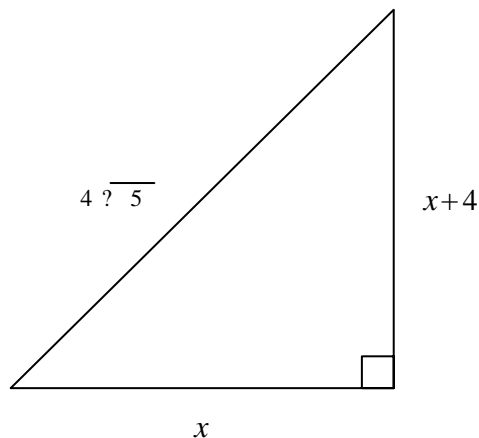
d. 17

e. None of the above.

6. Determine two coterminal angles (one positive and one negative) for  $\theta = -453^\circ$ .

# McKeague/Turner Trigonometry 8e - Chapter 2 Form E

\_\_\_\_ 7. Solve for  $x$  in the following right triangle:

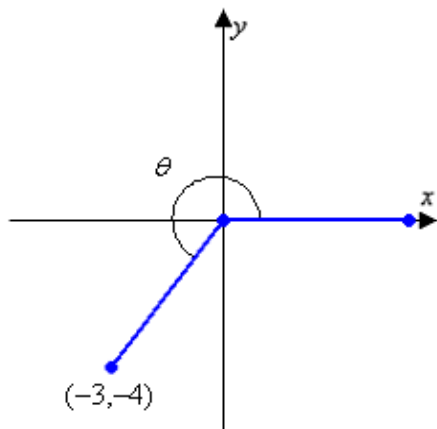


- |      |      |
|------|------|
| a. 6 | d. 3 |
| b. 7 | e. 4 |
| c. 5 |      |

\_\_\_\_ 8. Find the lengths of the shortest two sides of a  $30^\circ - 60^\circ - 90^\circ$  triangle, if the length of the longest side is 20.

- |                              |                            |
|------------------------------|----------------------------|
| a. 10, $10\sqrt{3}$          | d. 5, $5\sqrt{3}$          |
| b. 10, $\frac{10}{\sqrt{3}}$ | e. 5, $\frac{5}{\sqrt{3}}$ |
| c. 5, $\frac{10}{\sqrt{3}}$  |                            |

9. Given the figure below, determine the value of  $\sin \theta$ .



## McKeague/Turner Trigonometry 8e - Chapter 2 Form E

\_\_\_\_\_ 10. Indicate the two quadrants  $\theta$  could terminate in if  $\tan \theta = -\frac{17}{25}$ .

- a. Quadrants III and IV
- b. Quadrants II and IV
- c. Quadrants I and III
- d. Quadrants I and IV
- e. Quadrants II and III

\_\_\_\_\_ 11. Evaluate  $\sin 300^\circ$ .

- a.  $-\frac{\sqrt{3}}{2}$
- b.  $-\frac{1}{2}$
- c.  $\frac{1}{2}$
- d.  $\frac{\sqrt{3}}{2}$
- e.  $-\frac{\sqrt{2}}{2}$

12. The point  $(8, 15)$  is on the terminal side of an angle in standard position. Determine the exact value of  $\cot \theta$ .

\_\_\_\_\_ 13. Find  $\sin \theta$  if  $\csc \theta = \frac{-37}{31}$ .

- a.  $\frac{6}{37}$
- b.  $-\frac{6}{37}$
- c.  $-\frac{31}{37}$
- d.  $\frac{6}{31}$
- e.  $\frac{31}{37}$

\_\_\_\_\_ 14. Find  $\tan \theta$  if  $\sec \theta = \frac{\sqrt{410}}{11}$  and  $\csc \theta = \frac{\sqrt{410}}{17}$ .

- a.  $\frac{410}{187}$
- b.  $\frac{187}{410}$
- c.  $-\frac{11}{17}$
- d.  $\frac{17}{11}$
- e.  $\frac{11}{17}$

## McKeague/Turner Trigonometry 8e - Chapter 2 Form E

- \_\_\_\_ 15. Multiply; then use fundamental identities to simplify the expression below and determine which of the following is *not* equivalent.

$$(2 - 2\cos x)(2 + 2\cos x)$$

- a.  $4 - \cos^2 x$
- b.  $4 - 4\cos^2 x$
- c.  $4\sin^2 x$
- d.  $\frac{4}{\csc^2 x}$
- e.  $\frac{4}{1 + \cot^2 x}$

- \_\_\_\_ 16. If  $\sin \theta = \frac{-8}{\sqrt{113}}$  and  $\theta$  terminates in QIII, find  $\cos \theta$ .

a.  $\frac{-7}{\sqrt{113}}$

b.  $\frac{-7}{8}$

c.  $\frac{7}{8}$

d.  $\frac{7}{\sqrt{113}}$

e.  $\frac{-\sqrt{113}}{49}$

## McKeague/Turner Trigonometry 8e - Chapter 2 Form E

\_\_\_\_ 17. Suppose  $\csc \theta = 9$  and  $\theta$  terminates in QII. Find the remaining trigonometric ratios of  $\theta$ .

a.  $\sin \theta = \frac{1}{9}$

$$\cos \theta = \frac{-4\sqrt{5}}{9}$$

$$\tan \theta = -4\sqrt{5}$$

$$\sec \theta = \frac{-9}{4\sqrt{5}}$$

$$\cot \theta = \frac{-1}{4\sqrt{5}}$$

b.  $\sin \theta = \frac{-4\sqrt{5}}{9}$

$$\cos \theta = \frac{1}{9}$$

$$\tan \theta = \frac{-1}{4\sqrt{5}}$$

$$\sec \theta = \frac{-9}{4\sqrt{5}}$$

$$\cot \theta = -4\sqrt{5}$$

c.  $\sin \theta = \frac{-4\sqrt{5}}{9}$

$$\cos \theta = \frac{1}{9}$$

$$\tan \theta = -4\sqrt{5}$$

$$\sec \theta = \frac{-9}{4\sqrt{5}}$$

$$\cot \theta = \frac{-1}{4\sqrt{5}}$$

d.  $\sin \theta = \frac{1}{9}$

$$\cos \theta = \frac{4\sqrt{5}}{9}$$

$$\tan \theta = \frac{1}{4\sqrt{5}}$$

$$\sec \theta = \frac{9}{4\sqrt{5}}$$

$$\cot \theta = 4\sqrt{5}$$

e.  $\sin \theta = \frac{1}{9}$

$$\cos \theta = \frac{-4\sqrt{5}}{9}$$

$$\tan \theta = \frac{-1}{4\sqrt{5}}$$

$$\sec \theta = \frac{-9}{4\sqrt{5}}$$

$$\cot \theta = -4\sqrt{5}$$

\_\_\_\_ 18. If  $\csc \theta = -11$ , find  $\csc^3 \theta$ .

a.  $-33$

b.  $\frac{-1}{33}$

c.  $\frac{-1}{1,331}$

d.  $-1,331$

e.  $1,331$

## McKeague/Turner Trigonometry 8e - Chapter 2 Form E

\_\_\_\_\_ 19. Find the length of the shorter sides of a  $45^\circ - 45^\circ - 90^\circ$  triangle if the length of the hypotenuse is 19.

a.  $\frac{19\sqrt{3}}{2}$

d.  $\frac{19}{2}$

b.  $\frac{19\sqrt{3}}{3}$

e.  $\frac{19\sqrt{2}}{4}$

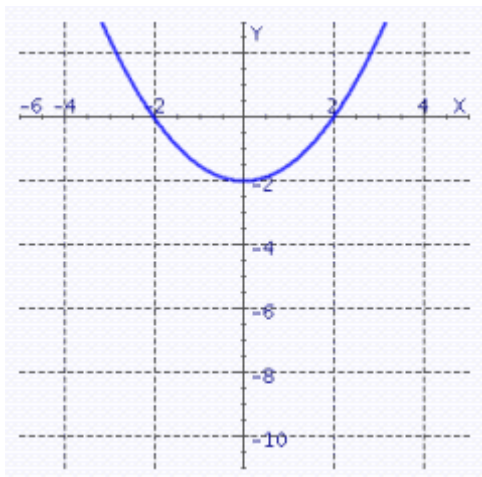
c.  $\frac{19\sqrt{2}}{2}$

## McKeague/Turner Trigonometry 8e - Chapter 2 Form E

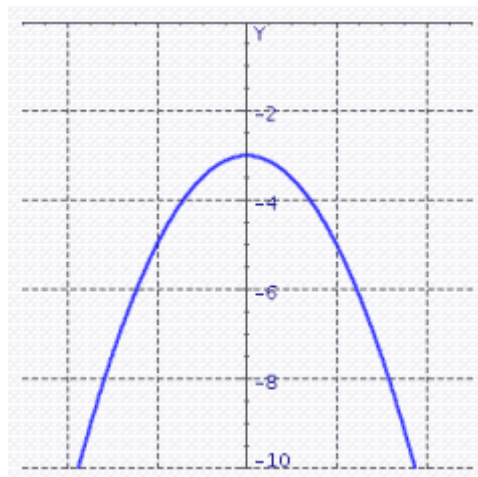
\_\_\_\_ 20. Graph the following parabola.

$$f(x) = -\frac{1}{2}x^2 - 2$$

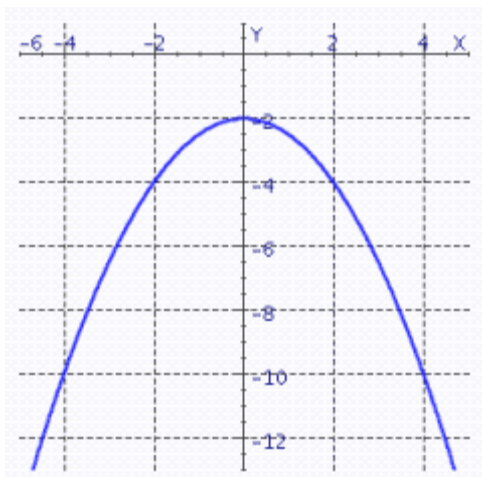
a.



d.

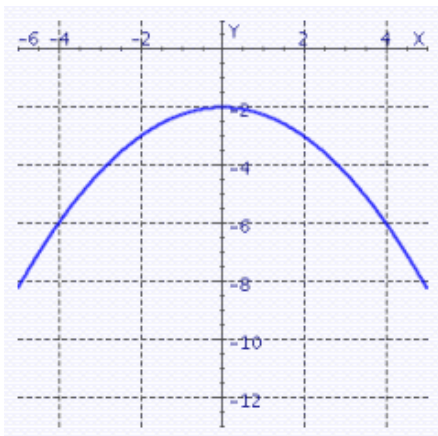


b.



e. None of the above.

c.





## McKeague/Turner Trigonometry 8e - Chapter 2 Form E

21. Given  $\sin 30^\circ = \frac{1}{2}$  and  $\cos 30^\circ = \frac{\sqrt{3}}{2}$ , determine the following:

$$\tan 30^\circ$$

- \_\_\_\_ 22. Find the distance between the two points (9, 4) and (49, 79).

- a. 170
- b. 85
- c. 82
- d. 255
- e. 167

- \_\_\_\_ 23. Simplify the expression  $\sqrt{x^2 + 10}$  as much as possible after substituting  $\sqrt{10} \tan \theta$  for  $x$ .

- a.  $\sqrt{10} |\sec \theta|$
- b.  $\sqrt{10} |\sin \theta|$
- c.  $\sqrt{10} |\csc \theta|$
- d.  $10 |\csc \theta|$
- e.  $10 |\sec \theta|$

- \_\_\_\_ 24. Simplify the expression  $\sqrt{30 - 6x^2}$  as much as possible after substituting  $\sqrt{5} \sin \theta$  for  $x$ .

- a.  $30 |\csc \theta|$
- b.  $\sqrt{30} |\csc \theta|$
- c.  $\sqrt{30} |\tan \theta|$
- d.  $30 |\cos \theta|$
- e.  $\sqrt{30} |\cos \theta|$

- \_\_\_\_ 25. Which of the following is equivalent to the given expression?

$$\frac{\sin^2 x}{1 - \cos x}$$

- a.  $\tan x + \sin x$
- b.  $1 + \cos x$
- c.  $\csc x + \cot x$
- d.  $\tan x \cot x - \cos x$
- e.  $\cot x \sin x + \tan x$

## McKeague/Turner Trigonometry 8e - Chapter 2 Form E

### Answer Section

1. D
2. B
3. E
4. B
5. A
6.  $267^\circ, -93^\circ$
7. E
8. A
9.  $\sin \theta = -\frac{4}{5}$
10. B
11. A
12.  $\cot \theta = \frac{8}{15}$
13. C
14. D
15. A
16. A
17. E
18. D
19. C
20. B
21.  $\tan 30^\circ = \frac{\sqrt{3}}{3}$
22. B
23. A
24. E
25. B

## McKeague/Turner Trigonometry Chapter 2 Form F

### Multiple Choice

Identify the choice that best completes the statement or answers the question.

- \_\_\_\_\_ 1. Use fundamental identities to simplify the expression below and then determine which of the following is *not* equivalent.

$$\cot \beta \sec \beta$$

- a.  $\frac{1}{\sin \beta}$
- b.  $\frac{\sec \beta}{\tan \beta}$
- c.  $\frac{1}{\cos \beta \tan \beta}$
- d.  $\sec \beta$
- e.  $\csc \beta$

- \_\_\_\_\_ 2. Find the complement and supplement of the angle  $55^\circ$ .

- |   |   |
|---|---|
| a. Complement: $45^\circ$<br>Supplement: $145^\circ$  | d. Complement: $35^\circ$<br>Supplement: $125^\circ$  |
| b. Complement: $125^\circ$<br>Supplement: $35^\circ$  | e. Complement: $125^\circ$<br>Supplement: $305^\circ$ |
| c. Complement: $145^\circ$<br>Supplement: $235^\circ$ |   |

- \_\_\_\_\_ 3. Determine which of the following points is located in quadrant 4.

- |               |              |
|---------------|--------------|
| a. $(-5, -6)$ | d. $(-6, 5)$ |
| b. $(6, -5)$  | e. $(-5, 6)$ |
| c. $(5, 6)$   |              |

- \_\_\_\_\_ 4. Which of the following points lies on the unit circle?

- a.  $\left(\frac{-5}{7}, \frac{2\sqrt{6}}{7}\right)$
- b.  $\left(\frac{-5}{9}, \frac{-2\sqrt{6}}{9}\right)$
- c.  $\left(\frac{3}{7}, \frac{2\sqrt{6}}{7}\right)$
- d.  $\left(\frac{-3}{11}, \frac{2\sqrt{6}}{11}\right)$
- e. None of the above.

## McKeague/Turner Trigonometry Chapter 2 Form F

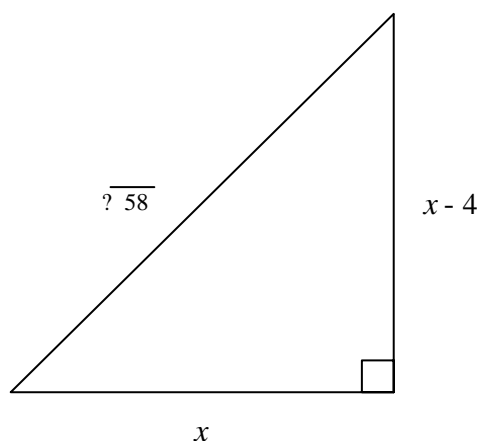
5. Determine two coterminal angles (one positive and one negative) for  $\theta = -526^\circ$ .

\_\_\_\_\_ 6. Let triangle  $ABC$  be a right triangle with  $C = 90^\circ$ . If  $c = 19$  and  $a = 6$ , find  $b$ .

- a.  $\sqrt{13}$
- b.  $\sqrt{397}$
- c. 13

- d.  $5\sqrt{13}$
- e. None of the above.

\_\_\_\_\_ 7. Solve for  $x$  in the following right triangle:



- a. 8
- b. 9
- c. 6

- d. 7
- e. 10

\_\_\_\_\_ 8. Find the lengths of the shortest two sides of a  $30^\circ - 60^\circ - 90^\circ$  triangle, if the length of the longest side is 16.

- a.  $4, \frac{8}{\sqrt{3}}$
- b.  $4, 4\sqrt{3}$
- c.  $8, \frac{8}{\sqrt{3}}$

- d.  $4, \frac{4}{\sqrt{3}}$
- e.  $8, 8\sqrt{3}$

## McKeague/Turner Trigonometry Chapter 2 Form F

\_\_\_\_\_ 9. Indicate the two quadrants  $\theta$  could terminate in if  $\tan \theta = -\frac{13}{23}$ .

- a. Quadrants I and III
- b. Quadrants III and IV
- c. Quadrants II and III
- d. Quadrants I and IV
- e. Quadrants II and IV

\_\_\_\_\_ 10. Evaluate  $\sin 240^\circ$ .

- a.  $-\frac{1}{2}$
- b.  $\frac{1}{2}$
- c.  $\frac{\sqrt{3}}{2}$
- d.  $-\frac{\sqrt{2}}{2}$
- e.  $-\frac{\sqrt{3}}{2}$

11. The point  $(7, 24)$  is on the terminal side of an angle in standard position. Determine the exact value of  $\csc \theta$ .

\_\_\_\_\_ 12. Find  $\sin \theta$  if  $\csc \theta = \frac{-17}{13}$ .

- a.  $-\frac{13}{17}$
- b.  $\frac{4}{13}$
- c.  $\frac{4}{17}$
- d.  $\frac{13}{17}$
- e.  $-\frac{4}{17}$

\_\_\_\_\_ 13. Find  $\tan \theta$  if  $\sec \theta = \frac{\sqrt{410}}{11}$  and  $\csc \theta = \frac{\sqrt{410}}{17}$ .

- a.  $\frac{11}{17}$
- b.  $\frac{17}{11}$
- c.  $-\frac{11}{17}$
- d.  $\frac{187}{410}$
- e.  $\frac{410}{187}$

## McKeague/Turner Trigonometry Chapter 2 Form F

- \_\_\_\_ 14. Multiply; then use fundamental identities to simplify the expression below and determine which of the following is *not* equivalent.

$$(\tan x + 1)^2$$

- a.  $\tan^2 x + 1$
- b.  $\sec^2 x + 2 \tan x$
- c.  $\frac{1 + 2 \sin x \cos x}{\cos^2 x}$
- d.  $\tan^2 x + 2 \tan x + 1$
- e.  $\sec^2 x(1 + 2 \sin x \cos x)$

- \_\_\_\_ 15. If  $\sin \theta = \frac{-6}{\sqrt{157}}$  and  $\theta$  terminates in QIII, find  $\cos \theta$ .

- a.  $\frac{11}{\sqrt{157}}$
- b.  $\frac{-\sqrt{157}}{121}$
- c.  $\frac{-11}{\sqrt{157}}$

- d.  $\frac{-6}{11}$
- e.  $\frac{6}{11}$

## McKeague/Turner Trigonometry Chapter 2 Form F

\_\_\_\_ 16. Suppose  $\csc \theta = 7$  and  $\theta$  terminates in QII. Find the remaining trigonometric ratios of  $\theta$ .

a.  $\sin \theta = \frac{1}{7}$

$$\cos \theta = \frac{-4\sqrt{3}}{7}$$

$$\tan \theta = -4\sqrt{3}$$

$$\sec \theta = \frac{-7}{4\sqrt{3}}$$

$$\cot \theta = \frac{-1}{4\sqrt{3}}$$

b.  $\sin \theta = \frac{-4\sqrt{3}}{7}$

$$\cos \theta = \frac{1}{7}$$

$$\tan \theta = -4\sqrt{3}$$

$$\sec \theta = \frac{-7}{4\sqrt{3}}$$

$$\cot \theta = \frac{-1}{4\sqrt{3}}$$

c.  $\sin \theta = \frac{1}{7}$

$$\cos \theta = \frac{4\sqrt{3}}{7}$$

$$\tan \theta = \frac{1}{4\sqrt{3}}$$

$$\sec \theta = \frac{7}{4\sqrt{3}}$$

$$\cot \theta = 4\sqrt{3}$$

d.  $\sin \theta = \frac{1}{7}$

$$\cos \theta = \frac{-4\sqrt{3}}{7}$$

$$\tan \theta = \frac{-1}{4\sqrt{3}}$$

$$\sec \theta = \frac{-7}{4\sqrt{3}}$$

$$\cot \theta = -4\sqrt{3}$$

e.  $\sin \theta = \frac{-4\sqrt{3}}{7}$

$$\cos \theta = \frac{1}{7}$$

$$\tan \theta = \frac{-1}{4\sqrt{3}}$$

$$\sec \theta = \frac{-7}{4\sqrt{3}}$$

$$\cot \theta = -4\sqrt{3}$$

17. Given  $\sin 30^\circ = \frac{1}{2}$  and  $\cos 30^\circ = \frac{\sqrt{3}}{2}$ , determine the following:

$$\sec 30^\circ$$

## McKeague/Turner Trigonometry Chapter 2 Form F

\_\_\_\_\_ 18. If  $\csc \theta = -11$ , find  $\csc^3 \theta$ .

a.  $-33$

d.  $\frac{-1}{33}$

b.  $\frac{-1}{1,331}$

e.  $1,331$

c.  $-1,331$

\_\_\_\_\_ 19. Find the length of the shorter sides of a  $45^\circ - 45^\circ - 90^\circ$  triangle if the length of the hypotenuse is 17.

a.  $\frac{17}{2}$

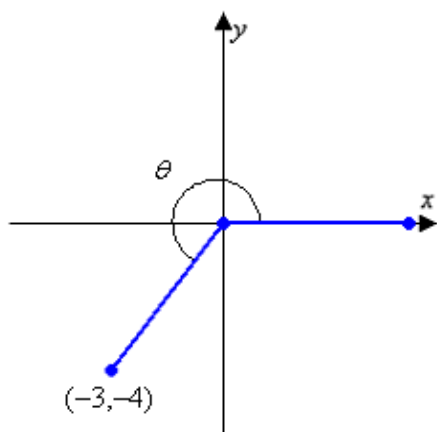
d.  $\frac{17\sqrt{3}}{2}$

b.  $\frac{17\sqrt{3}}{3}$

e.  $\frac{17\sqrt{2}}{2}$

c.  $\frac{17\sqrt{2}}{4}$

20. Given the figure below, determine the value of  $\sin \theta$ .



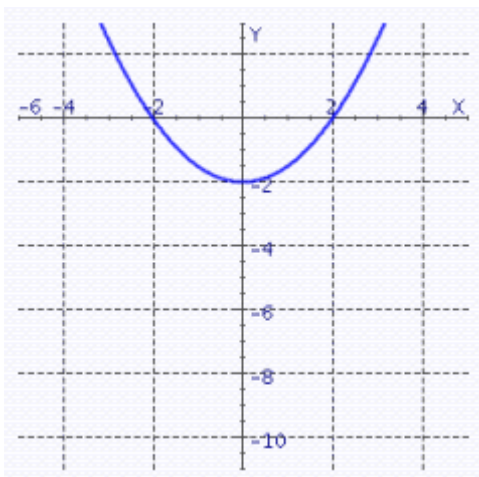


## McKeague/Turner Trigonometry Chapter 2 Form F

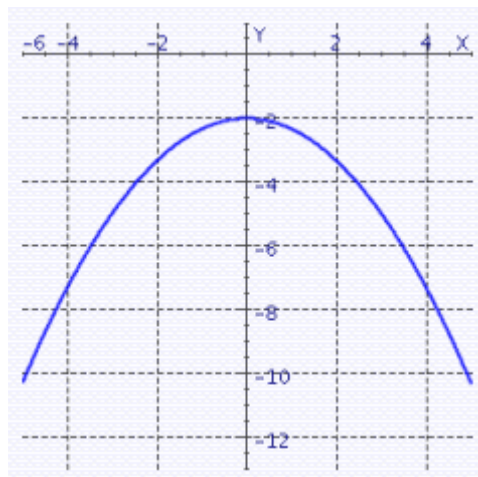
\_\_\_\_ 21. Graph the following parabola.

$$f(x) = -\frac{1}{2}x^2 - 2$$

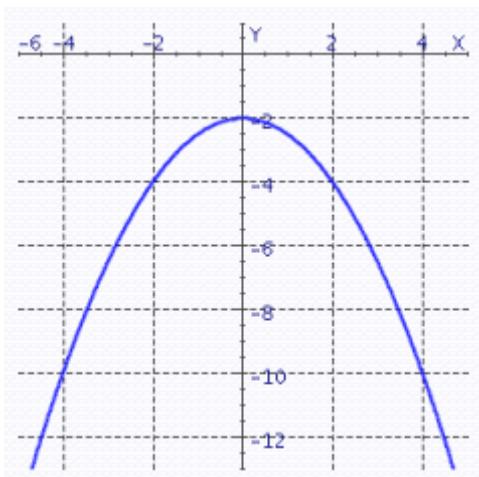
a.



d.

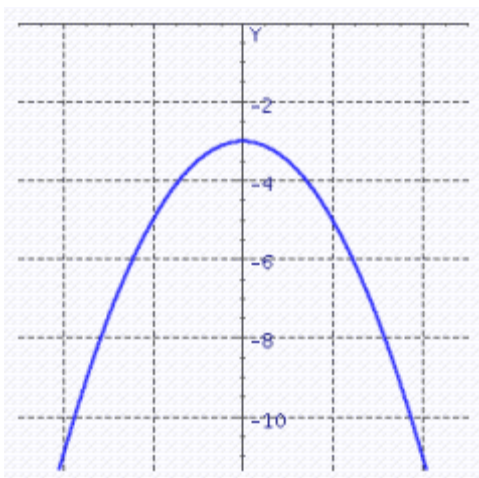


b.



e. None of the above.

c.



## McKeague/Turner Trigonometry Chapter 2 Form F

\_\_\_\_\_ 22. Find the distance between the two points  $(4, 2)$  and  $(10, 10)$ .

- a. 20
- b. 10
- c. 7
- d. 30
- e. 17

\_\_\_\_\_ 23. Which of the following is equivalent to the given expression?

$$\frac{\cos^2 x}{1 + \sin x}$$

- a.  $\tan x + \cos x$
- b.  $1 - \sin x$
- c.  $\csc x + \cot x$
- d.  $\tan x \cot x - \sin x$
- e.  $\cot x \cos x + \tan x$

\_\_\_\_\_ 24. Simplify the expression  $\sqrt{x^2 + 13}$  as much as possible after substituting  $\sqrt{13} \tan \theta$  for  $x$ .

- |                              |                       |
|------------------------------|-----------------------|
| a. $\sqrt{13}  \csc \theta $ | d. $13  \csc \theta $ |
| b. $\sqrt{13}  \sin \theta $ | e. $13  \sec \theta $ |
| c. $\sqrt{13}  \sec \theta $ |                       |

\_\_\_\_\_ 25. Simplify the expression  $\sqrt{30 - 6x^2}$  as much as possible after substituting  $\sqrt{5} \sin \theta$  for  $x$ .

- |                              |                              |
|------------------------------|------------------------------|
| a. $\sqrt{30}  \tan \theta $ | d. $\sqrt{30}  \csc \theta $ |
| b. $30  \csc \theta $        | e. $30  \cos \theta $        |
| c. $\sqrt{30}  \cos \theta $ |                              |

**McKeague/Turner Trigonometry Chapter 2 Form F**

**McKeague/Turner Trigonometry Chapter 2 Form F  
Answer Section**

1. D
2. D
3. B
4. A
5.  $194^\circ, -166^\circ$
6. D
7. D
8. E
9. E
10. E
11.  $\csc \theta = \frac{25}{24}$
12. A
13. B
14. A
15. C
16. D
17.  $\sec 30^\circ = \frac{2\sqrt{3}}{3}$
18. C
19. E
20.  $\sin \theta = -\frac{4}{5}$
21. B
22. B
23. B
24. C
25. C