Name: _____ **Class:** _____ **Date:** _____ **ID: A**

Chapter 6 Study Guide

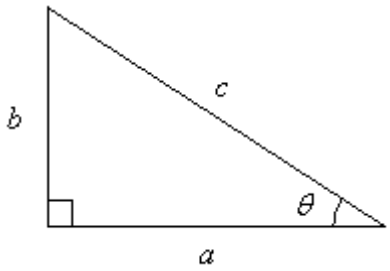
1. Find the reference number for $t = \frac{5\pi}{4}$.
   a. $\frac{\pi}{4}$
   b. $\frac{5\pi}{4}$
   c. $-\frac{\pi}{4}$
   d. $\frac{\pi}{5}$
2. Determine a pair of coterminal angles (in radian measure) to the angle $\frac{\pi}{2}$
   a. $\frac{3\pi}{2}, -\frac{\pi}{2}$
   b. $\frac{5\pi}{2}, \frac{3\pi}{2}$
   c. $\frac{7\pi}{2}, -\frac{\pi}{2}$
   d. $\frac{5\pi}{2}, -\frac{3\pi}{2}$
   e. $\frac{5\pi}{2}, -\frac{\pi}{2}$
3. Determine a positive angle and a negative angle (in radian measure) coterminal to the angle $-\frac{\pi}{6}$.
   a. $\frac{11\pi}{6}, -\frac{13\pi}{6}$
   b. $\frac{5\pi}{6}, -\frac{7\pi}{6}$
   c. $\frac{\pi}{3}, -\frac{7\pi}{6}$
   d. $\frac{11\pi}{6}, -\frac{5\pi}{6}$
   e. $\frac{\pi}{6}, -\frac{13\pi}{6}$
4. Determine a pair of angles (one positive and one negative) in degree measure coterminal to the angle 39°.
   a. 219°, –141°
   b. 399°, –321°
   c. 399°, –261°
   d. 78°, –39°
   e. 219°, –321°
5. Rewrite 95° in radian measure as a multiple of π.
   a. $\frac{19\pi}{6}$
   b. $\frac{19\pi}{12}$
   c. $\frac{19\pi}{2}$
   d. $\frac{19\pi}{9}$
   e. $\frac{19\pi}{36}$
6. Rewrite the given angle in radian measure as a multiple of π. (Do not use a calculator.)
   –270°
   a. $-\frac{\pi}{2}$
   b. -2π
   c. $-\frac{3\pi}{4}$
   d. $-\frac{3\pi}{2}$
   e. $-\frac{17\pi}{12}$

7. Rewrite the given angle in radian measure as a multiple of π. (Do not use a calculator.)
$15°$
   a. $\frac{13\pi}{12}$
   b. π
   c. $\frac{\pi}{24}$
   d. $\frac{\pi}{12}$
   e. $\frac{\pi}{6}$

8. Convert the radian measure to exact degree measure.
$\frac{3\pi}{5}$
   a. $315°$
   b. $51.4°$
   c. $1260°$
   d. $1978.2°$
   e. $630°$

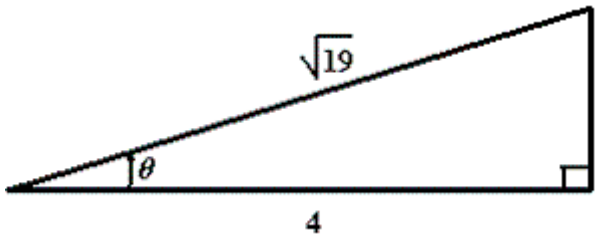
9. Rewrite the angle $\frac{2\pi}{3}$ radians in degree measure.
   a. $240°$
   b. $80°$
   c. $120°$
   d. $60°$
   e. $180°$

10. Find the exact value of $\csc\theta$, using the triangle shown in the figure below, if $a = 24$ and $b = 7$.



   a. $\frac{25}{7}$
   b. $\frac{25}{24}$
   c. $\frac{24}{7}$
   d. $\frac{7}{25}$
   e. $\frac{24}{25}$

11. Find the exact value of $\sec\theta$ using the figure given below.



12. Use a calculator to evaluate the function. Round your answers to four decimal places. (Be sure the calculator is in the correct angle mode.)
$\sin 19.3°$
a. 0.1402
b. 0.7685
c. 0.6521
d. 0.7581
e. 0.8601

13. Find the reference angle for $230°$.
a. $50°$
b. $40°$
c. $45°$
d. $48°$
e. $43°$

14. Evaluate the tangent of the real number $t = -\frac{4\pi}{3}$.
a. $\frac{\sqrt{3}}{3}$
b. $-\frac{\sqrt{3}}{3}$
c. $-\sqrt{3}$
d. $\sqrt{3}$
e. 1

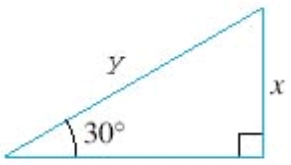
15. Evaluate, if possible, the given trigonometric function at the indicated value.
$\cos t, t = \frac{4\pi}{3}$
a. $-\frac{1}{2}$
b. $-\frac{\sqrt{3}}{2}$
c. $-\frac{2\sqrt{3}}{3}$
d. $\frac{\sqrt{3}}{2}$
e. not possible

16. Find the degree measure of the angle: $\frac{\pi}{15}$ rad.
a. $12°$
b. $6°$
c. $16°$
d. $27°$

17. The measure of the angle $330°$ in standard position is given. Find two positive angles and two negative angles that are coterminal with the given angle.
a. $426°, 786°, -294°, -654°$
b. $670°, 1060°, -70°, -345°$
c. $710°, 1020°, -50°, -360°$
d. $690°, 1050°, -30°, -390°$

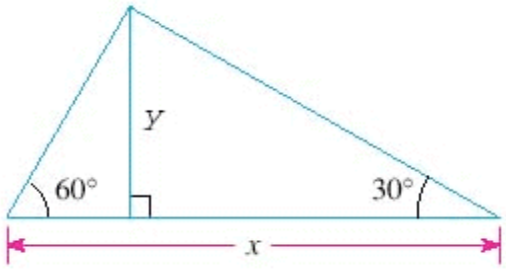
18. The measure of the angle $\frac{13\pi}{4}$ in standard position is given. Find minimal positive angle and maximal negative angles that are coterminal with the given angle.
a. $\frac{\pi}{4}; -\frac{\pi}{4}$
b. $\frac{5\pi}{4}; \frac{21\pi}{4}$
c. $\frac{5\pi}{4}; \frac{-3\pi}{4}$
d. $\frac{9\pi}{4}; \frac{1\pi}{4}$

19. What is the side labeled x equal to, if $y = 22$?



a. 11
b. 22
c. 44

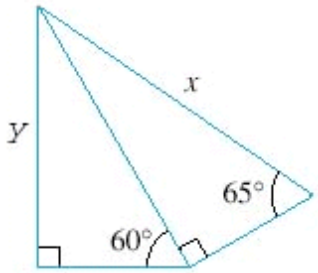
20. Find x correct to one decimal place.



$y = 55$

a. 127
b. 31.8
c. 95.3

21. Find x correct to one decimal place.



$y = 60$

a. 69.3
b. 66.2
c. 76.4

22. The angle of elevation to the top of a particular skyscraper in New York is found to be 12° from the ground at a distance of 1.3 mi from the base of the building. Using this information, find the height of the skyscraper.

a. 1459 ft
b. 1560 ft
c. 2918 ft

23. A 109 ft tree casts a shadow that is 130 ft long. What is the angle of elevation of the sun?

a. 50°
b. –50°
c. –40°
d. 40°

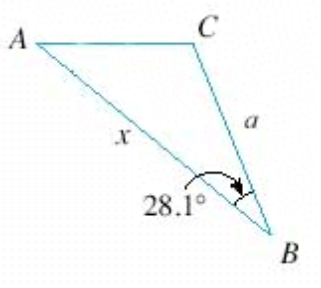
24. Find the reference angle for the angle measuring $\frac{15\pi}{11}$.

a. $\frac{11\pi}{4}$
b. $\frac{4\pi}{15}$
c. $\frac{4\pi}{11}$
d. $-\frac{4\pi}{11}$

25. Choose the value of the trigonometric function $\cos\theta$ using the information:$\sin\theta = \frac{1}{5}$, θ in quadrant I.

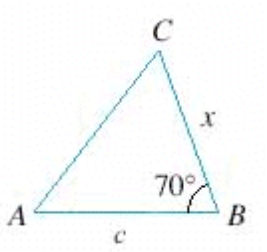
a. $-\frac{\sqrt{24}}{5}$
b. No correct answer
c. $\frac{\sqrt{24}}{5}$

26. Use the Law of Sines to find x. Let $a = 85$, $\angle A = 34.6°$.



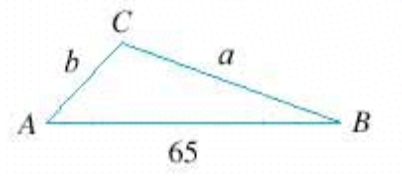
a. 132
b. 134
c. 133
d. 135

27. Use the Law of Sines to find x. Let c =21, $\angle A = 58°$.



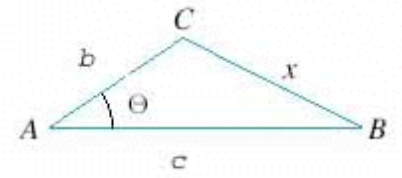
a. 24
b. 25
c. 46
d. 23

28. Solve the triangle using the Law of Sines. Let $\angle A = 54°$, $\angle B = 16°$.



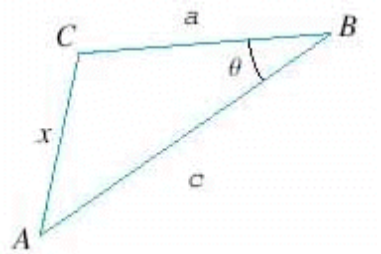
a. $\angle C = 120°$, $b = 19$, $a = 57$
b. $\angle C = 112°$, $b = 17$, $a = 56$
c. $\angle C = 109°$, $b = 20$, $a = 59$
d. $\angle C = 110°$, $b = 19$, $a = 56$

29. Use the Law of Cosines to determine side x if $b = 9$, $c = 18$, and $\theta = 27°$.



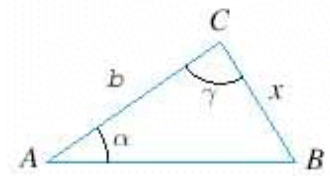
a. 10.78
b. 26.34
c. No correct answer

30. Use the Law of Cosines to determine side x if $a = 30$, $c = 36$ and $\theta = 25°$ correct to two decimal places.



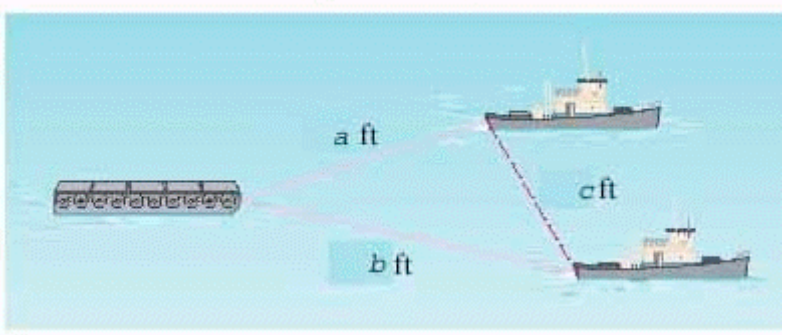
a. 26.98
b. 15.44
c. 7.42

31. Find the indicated side x if $b = 6$, $a = 33°$, $y = 70°$. (Use either the Law of Sines or the Law of Cosines, as appropriate.)



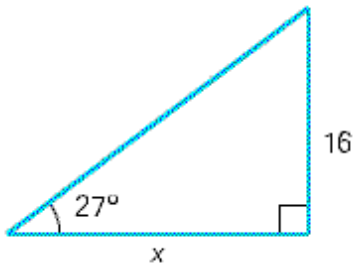
a. 22.369
b. 14.527
c. 3.354
d. 5.164

32. Two tugboats that are 118 ft apart pull a barge, as shown. If the length of one cable is 206 and the length of the other is 227, find the angle formed by the two cables.



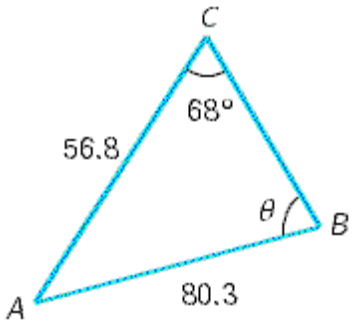
a. 37.38°
b. 28.03°
c. 31.15°
d. 43.61°

33. Find the side labeled *x*. State your answer correct to five decimal places.



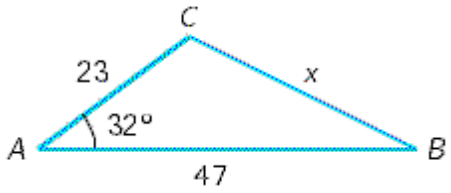
x = _____

34. Use the Law of Sines to find the indicated angle θ. Please round the answer to the nearest tenth.



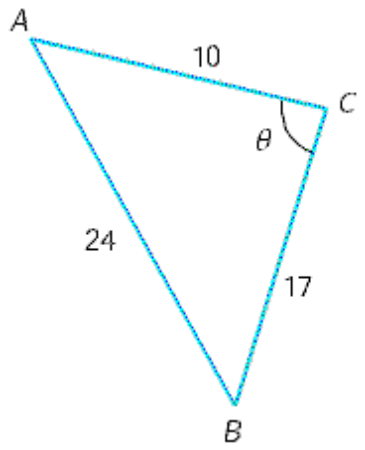
θ = _____ °

35. Use the Law of Cosines to determine the indicated side *x*. Please round the answer to the nearest tenth.



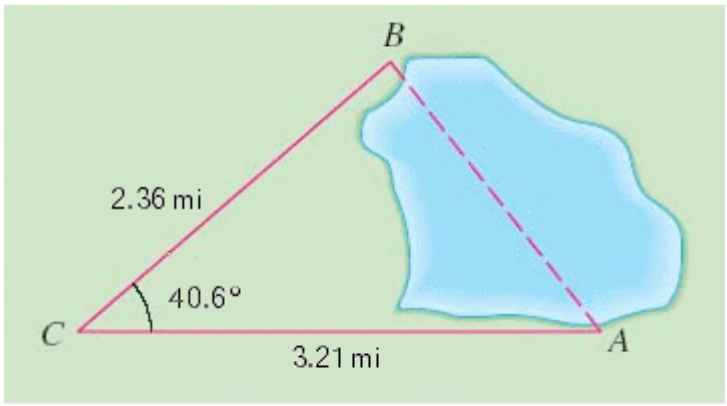
x = _____

36. Use the Law of Cosines to determine the indicated angle θ. Please round the answer to the nearest hundredth.



θ = _____ °

37. To find the distance across a small lake, a surveyor has taken the measurements shown. Find the approximate distance across the lake using this information. Please round the answer to the nearest hundredth.

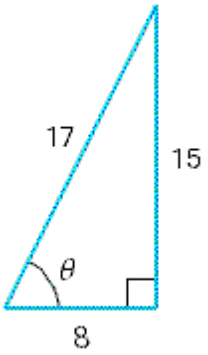


_____ mi

38. Find the exact value of the trigonometric function at the given real number.

$\csc \frac{3\pi}{2}$

39. Find the exact values of the six trigonometric ratios of the angle θ in the triangle.Enter your answer as a fraction.



(a) Find $\sin\theta$

(b) Find $\cos\theta$

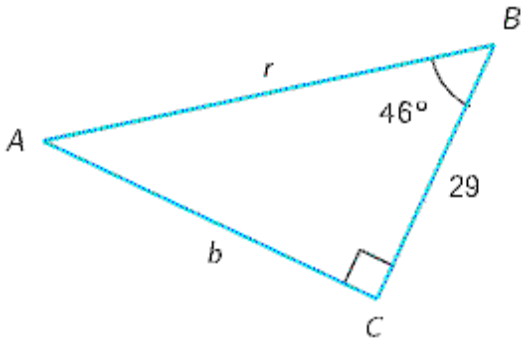
(c) Find $\tan\theta$

(d) Find $\csc\theta$

(e) Find $\sec\theta$

(f) Find $\cot\theta$

40. Solve the right triangle.



(a) Find b. Please give the answer to two decimal places.

(b) Find r. Please give the answer to two decimal places.

(c) Find $\angle A$.

$\angle A =$ _____ °

41. Find the reference angle for the given angle.

(a) $\frac{5\pi}{4}$

(b) $\frac{21\pi}{4}$

(c) $-\frac{47\pi}{6}$

42. Find the exact value for each trigonometric function.

(a) sin 120°

(b) sin 240°

(c) cos 210°

43. Find the exact value for each trigonometric function.

(a) $\sin \frac{2\pi}{3}$

(b) $\sin \frac{4\pi}{3}$

(c) $\sin \frac{9\pi}{2}$

44. Find the exact value of the trigonometric function at the given real number.

$\tan \frac{7\pi}{6}$

45. Find the degree measure of the angle with the given radian measure.

(a) $\frac{11\pi}{6}$

_____ °

(b) $-\frac{3\pi}{4}$

_____ °

Chapter 6 Study Guide
Answer Section

1. A
2. D
3. A
4. B
5. E
6. D
7. D
8. E
9. C
10. A
11. $\frac{\sqrt{17}}{4}$
12. C
13. A
14. C
15. A
16. A
17. D
18. C
19. A
20. A
21. C
22. A
23. D
24. C
25. C
26. C
27. D
28. D
29. A
30. B
31. C
32. C
33. 31.40177
34. 41
35. 30.1
36. 123.37
37. 2.09
38. -1
39. $\frac{15}{17}; \frac{8}{17}; \frac{15}{8}; \frac{17}{15}; \frac{17}{8}; \frac{8}{15}$
40. 30.03; 41.75; 44

41. $\frac{\pi}{4}; \frac{\pi}{4}; \frac{\pi}{6}$
42. $\frac{\sqrt{3}}{2}; -\frac{\sqrt{3}}{2}; -\frac{\sqrt{3}}{2}$
43. $\frac{\sqrt{3}}{2}; -\frac{\sqrt{3}}{2}; 1$
44. $\frac{\sqrt{3}}{3}$
45. 330; –135