Chapter 7, The Calculator and Solving Triangles

Focus Exercise Answers ALL

Sec. 7.1 Angle Measures in Degrees, Minutes, and Seconds

1.	42.4°	**2.**	92.338°	**3.**	8.757°
4.	126.841°	**5.**	20.26°	**6.**	152.538°
7.	$49° \, 18'$	**8.**	$21° \, 09'$	**9.**	$87° \, 07' \, 30''$
10.	$67° \, 27' \, 36''$	**11.**	$135° \, 22' \, 53''$	**12.**	$7° \, 04' \, 0.3''$

Sec. 7.2 Scientific Calculators and Trigonometric Functions

1.	0.7660	**2.**	3.7321	**3.**	-0.7660	**4.**	-0.9848
5.	Error (Undef.)	**6.**	-1	**7.**	0.8090	**8.**	0.4339
9.	0.4142	**10.**	0.7660	**11.**	0.9749	**12.**	-5.6713
13.	1.3054	**14.**	-2.3662	**15.**	-1.1106	**16.**	-1.0946
17.	-1.2208	**18.**	3.2709	**19.**	1.0515	**20.**	1.1434
21.	$\theta = 89°$	**22.**	$\theta = 56°$	**23.**	$\theta = 49°$	**24.**	$\theta = -70.4°$
25.	$\theta = 140.5°$	**26.**	$\theta = -56.1°$	**27.**	$\theta = 55°$	**28.**	$\theta = 22°$
29.	$\theta = 54°$	**30.**	$\theta = -32°$	**31.**	$\theta = -46°$	**32.**	$\theta = 118°$

Section 7.3 Solving Right Triangles

1.	$B = 35°$ $a = 12.9$ in. $c = 15.7$ in.	**2.**	$A = 66°$ $a = 38.2$ ft $c = 41.8$ ft	**3.**	$B = 19.8°$ $b = 5.3$ cm $c = 15.5$ cm
4.	$A = 33.1°$ $B = 56.9°$ $b = 9.2$ ft	**5.**	$A = 55°$ $B = 35°$ $c = 12.2$ in.	**6.**	$A = 48.1°$ $B = 41.9°$ $a = 17.7$ cm
7.	$x = 67.5$ $y = 35$ $BD = 102.5$	**8.**	$x = 6.4$ $h = 10.7$		

Section 7.4 Applications Involving Right Triangles

1. Mark's boat will be making an 18.5° angle with the shoreline.

2. a) The length of each of the congruent sides is 14.9 cm.
b) The altitude of the triangle is 9.0 cm.

3. The distance across the lake is 273 yards.

4. The angle of depression is 33.4°.

5. The top of the third floor is 28 feet above the street.

6. a) The cliff is 187 feet high.
b) The rock is 223 from the bottom of the cliff.

7. The closer rock is 29 feet from the bottom of the cliff.

8. Point A should be located 13.4 feet from point C. Point D should be located 21.8 feet from point C.

Section 7.5 Solving Oblique Triangles: Law of Sines

Note: Your answers might vary a little due to rounding errors.

1. $B = 43°$, $b = 8.4$ in., $c = 12.3$ in.

2. $A = 38°$, $a = 16.3$ ft, $c = 12.0$ ft.

3. $C = 35°$, $a = 25.8$ in., $b = 17.7$ in.

4. $B = 25°$, $a = 22.4$ cm, $c = 21.3$ cm

5. $B = 48.3°$, $C = 19.7°$, $b = 8.9$ ft

6. $A = 143.8°$, $B = 13.7°$, $a = 7.7$ cm

7. $\overline{AB}$ is 12.5 m

8. $\overline{AC}$ is 24.7 cm

9. The distance between the two docks is 215.4 yards.

10. $\overline{AB}$ is 179.8 ft.

11. $\overline{AB}$ is 15 in.; $\overline{CB}$ is 17.7 in.

12. The shorter side is about 2.5 m.

13. The height of the Cypress is about 49 feet.

14. The fence post is 4.6 feet long.

15. The height of the spruce is 55.7 feet.

16. The height of the cliff is 68 feet.

Section 7.6 Solving Oblique Triangles: Law of Cosines

Note: Your answers might vary a little due to rounding errors.

1. $A = 45.7°$, $B = 35.3°$, $c = 29$ in.

2. $B = 47°$, $C = 19°$, $a = 17.1$ cm

3. $A = 132.8°$, $C = 15.2°$, $b = 10.1$ yd

4. $A = 120.9°$, $B = 15.6°$, $c = 5.4$ m

5. $A = 70°$, $B = 48.7°$, $C = 61.3°$

6. $A = 55.2°$, $B = 37.9°$, $C = 86.9°$

7. $A = 29.6°$, $B = 130°$, $C = 20.4°$

8. $A = 90°$, $B = 73.7°$, $C = 16.3°$

9. $AD = 8.6$ in.

10. The measure of angle A is 110°.

11. The distance between the two docks is 108.3 yards.

12. $\overline{AB}$ is 194.5 m.

13. **a)** Civic Avenue will be about 3.7 miles long.

b) The angle between Civic Avenue and Baker Street will be about 30.1°.

14. The angle of elevation is 63.9°.

Section 7.7 Solving Oblique Triangles: The Ambiguous Case

Note: Your answers might vary a little due to rounding errors.

1. $h \approx 2.1$, and $a < h$, so there is no triangle.

2. $h \approx 14.8$, and $a < h$, so there is no triangle.

3. $h \approx 11.60074$, which is very close to $a = 11.6$; this is close enough to say $h = a$, and it is safe to assume that B is a right angle: $B = 90°$; $C = 25°$; and $c \approx 5.4$ ft.

4. $h \approx 6.73$ and $h < a$. Also, $a \geq b$, which means $\angle B$ is acute (because $B < A$), so there is only one triangle: $B \approx 46.4°$; $C \approx 72.6°$; and $c \approx 10.1$ m.

5. A is obtuse, and $a > b$, so there is one triangle: $B \approx 36.6°$; $C = 13.4°$; and $c \approx 2.7$ ft.

6. A is obtuse, and $a > b$, so there is one triangle: $B \approx 15.5°$; $C \approx 24.5°$; and $c \approx 3.9$ ft.

7. $h \approx 12.40011$, which is very close to $a = 12.4$; this is close enough to say $h = a$, and it is safe to assume that B is a right angle: $B = 90°$; $C = 58°$; and $c \approx 19.8$ ft.

8. A is obtuse, and $a < b$, so there is no triangle.

9. $h \approx 11.03$ and $h < a < b$, so there are two triangles:

Δ_1: $B_1 \approx 55.4°$; $C_1 \approx 79.6°$; and $c_1 \approx 18.6$ cm.

Δ_2: $B_2 \approx 124.6°$; $C_2 \approx 10.4°$; and $c_2 \approx 3.4$ cm.