Sec. 13.4- 13.6- Trigonometric Functions

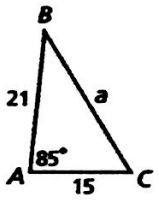
New Objectives from Test:

- ☐ Evaluate inverse trigonometric functions. (13.4)
- ☐ Use trigonometric equations and inverse trigonometric functions to solve problems. (13.4)
- ☐ Determine the area of a triangle given side-angle-side information. (13.5)
- ☐ Use the Law of Sines to find the side lengths and angle measures of a triangle. (13.5)
- ☐ Be able to determine how many triangles can be made with the given information. (13.5)
- ☒ Use the Law of Cosines to find the side lengths and angle measures of a triangle. (13.6)
- ☐ Use Heron's Formula to find the area of a triangle. (13.6)

The Law of Cosines

Use the given measurements to solve each triangle. Round to the nearest tenth.

8.



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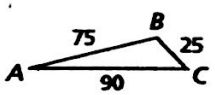

Sec. 13.4- 13.6- Trigonometric Functions

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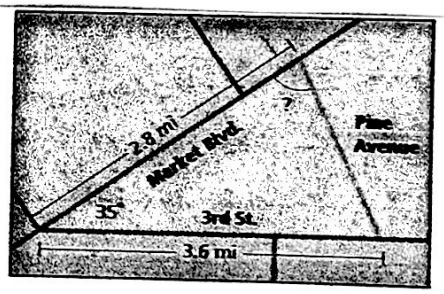
then find the area of the triangle.

10. A civil engineer is working on plans for a new road called Pine Avenue. This road will intersect Market Boulevard and 3rd Street as shown. To the nearest degree, what is the measure of the angle that Pine Avenue will make with Market Boulevard?

11. A school courtyard is shaped like a triangle. Its sides measure 25 yards, 27.5 yards, and 32 yards. What is the area of the courtyard to the nearest square yard?



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Solve.

19. A 21-foot ladder is leaning against a building. The base of the ladder is 7 feet from the base of a building. To the nearest degree, what is the measure of the angle that the ladder makes with the ground?

c. 13.4- 13.6- Trigonometric Functions

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Solve each equation to the nearest tenth. Use the given restrictions.

13. $\sin\theta = 0.45$, for $0° < \theta < 90°$

14. $\sin\theta = 0.801$, for $90° < \theta < 270°$

15. $\tan\theta = 2.42$, for $180° < \theta < 360°$

16. $\cos\theta = -0.334$, for $0° < \theta < 180°$

17. $\cos\theta = -0.181$, for $180° < \theta < 360°$

18. $\tan\theta = -10$, for $90° < \theta < 270°$

13.4- 13.6- Trigonometric Functions

New Objectives from Test:

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- ☐ Use Heron's Formula to find the area of a triangle. (13.6)

Evaluate each inverse trigonometric function. Give your answer in both radians and degrees.

7. $\text{Sin}^{-1}(-1)$

8. $\text{Tan}^{-1}\left(-\sqrt{3}\right)$

9. $\text{Cos}^{-1}1$

10. $\text{Sin}^{-1}\left(\frac{\sqrt{3}}{2}\right)$

11. $\text{Tan}^{-1}\left(-\frac{\sqrt{3}}{3}\right)$

12. $\text{Cos}^{-1}\left(\frac{\sqrt{2}}{2}\right)$

13.4- 13.6- Trigonometric Functions

New Objectives from Test:

- [x] Evaluate inverse trigonometric functions. (13.4)
- [ ] Use trigonometric equations and inverse trigonometric functions to solve problems. (13.4)
- [ ] Determine the area of a triangle given side-angle-side information. (13.5)
- [ ] Use the Law of Sines to find the side lengths and angle measures of a triangle. (13.5)
- [ ] Be able to determine how many triangles can be made with the given information. (13.5)
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- [ ] Use Heron's Formula to find the area of a triangle. (13.6)

Name _____ Date _____ Class _____

LESSON 13-4

Practice B

Inverses of Trigonometric Functions

Find all possible values of each expression.

1. $\sin^{-1}\left(-\frac{\sqrt{3}}{2}\right)$ _____

2. $\cos^{-1}\left(-\frac{1}{2}\right)$ _____

3. $\tan^{-1}0$ _____

4. $\sin^{-1}\left(-\frac{\sqrt{2}}{2}\right)$

5. $\cos^{-1}\left(-\frac{\sqrt{2}}{2}\right)$

6. $\tan^{-1}\left(\frac{\sqrt{3}}{3}\right)$

Sec. 13.4- 13.6- Trigonometric Functions

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READY TO GO ON?

CHAPTER 13

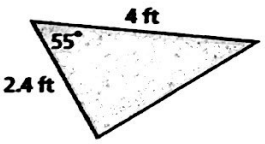
SECTION 13B

Quiz for Lessons 13-5 Through 13-6

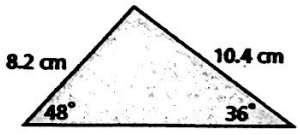
The Law of Sines

Find the area of each triangle. Round to the nearest tenth.

1.



2.



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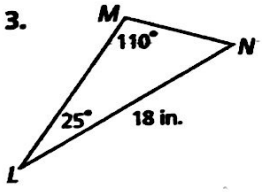
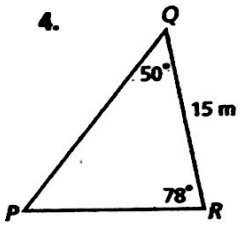
Solve each triangle. Round to the nearest tenth.

3.



4.



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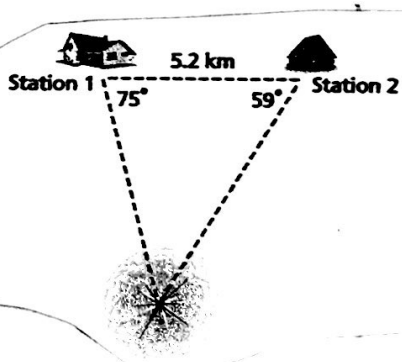
7. The rangers at two park stations spot a signal flare at the same time. Based on the measurements shown in the diagram, what is the distance between each park station and the point where the flare was set off? Round to the nearest tenth.



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Derrick is designing triangular panes for a stained glass window. Determine the number of different triangles that he can form using the given measurements. Then solve the triangles. Round to the nearest tenth.

5. $a = 2.1$ cm, $b = 1.8$ cm, $m\angle A = 42°$
6. $a = 3$ cm, $b = 4.6$ cm, $m\angle A = 95°$