4.3 Homework

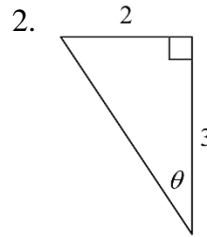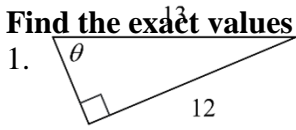**Find the exact values of sin θ, cos θ, and tan θ.**

1.

2.

Draw and label a triangle, find the length of the missing side, and find the requested values.

3. Find $\sin\theta$ and $\tan\theta$ if $\cos\theta = \dfrac{7}{25}$.

4. Find $\sin\theta$ and $\cos\theta$ if $\tan\theta = \dfrac{11}{8}$.

Draw and label a triangle with the given side and angle measures. Then solve the triangle – find all the missing side and angle measures. Show all your work. Round approximate answers to the nearest tenth.

5. $a = 4,\ b = 9$

6. $b = 9,\ c = 15$

7. $\alpha = 26°,\ c = 20$

8. $\beta = 78°,\ a = 2$

9. $\alpha = 39°9',\ a = 6$

Solve each problem. Show all your work.

10. An aerial photograph from a U-2 spy plane is taken of a building suspected of housing nuclear warheads. The photograph is made when the angle of elevation of the sun is 32°. By comparing the shadow cast by the building to objects of known size in the photograph, analysts determine that the shadow is 80 ft long. How tall is the building (to the nearest foot)?
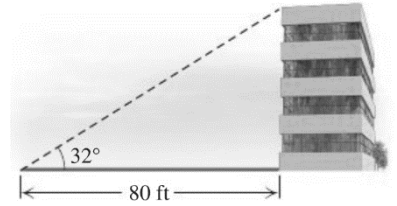

11. Muriel was hiking directly toward a long, straight road when she encountered a swamp. She turned 65° to the right and hiked 4 mi in that direction to reach the road. How far was she from the road (to the nearest tenth of a mile) when she encountered the swamp?
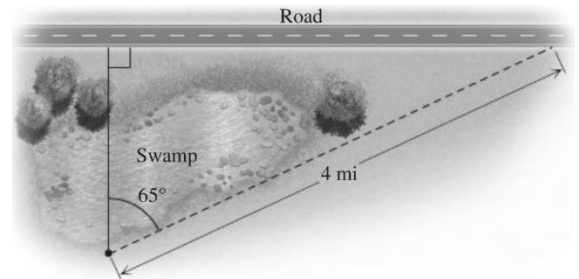
12. A gas pipe under a river is 196.8 ft below the surface at its lowest point as shown in the drawing. If the angle of depression of the pipe is 4.962°, then what is the distance from point A to point B on the surface of the water? What is the length of the pipe between points A and B? Round your answers to the nearest foot.
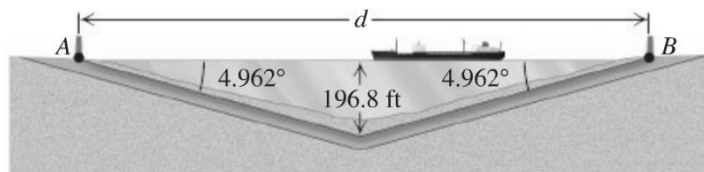
13. The angle of elevation of a pedestrian crosswalk over a busy street is 8.34°, as shown in the drawing. If the distance between the ends of the crosswalk measured on the ground is 342 ft, then what is the height, h, of the crosswalk at the center? Round to the nearest tenth of a foot.
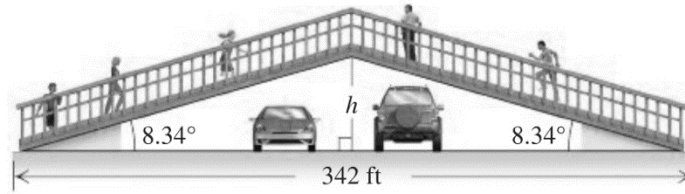
14. A 41-m guy wire (a slanted wire stretched from the ground to the top of a vertical antenna) is attached to the top of a 34.6-m antenna and to a point on the ground. How far is the point on the ground from the base of the antenna (to the nearest meter), and what angle does the guy wire make with the ground (to the nearest tenth of a degree)?

15. A hot air balloon is *between* two spotters who are 1.2 miles apart. One spotter reports that the angle of elevation of the balloon is 76°, and the other reports that it is 68°. What is the height of the balloon to the nearest tenth of a mile?