PRACTICE EXERCISES (2-24 even)

Solve each right triangle *ABC*.

1.

2.

3.

4.

5.

6.
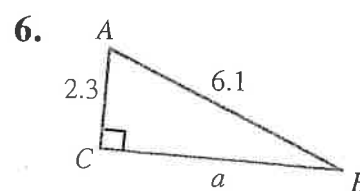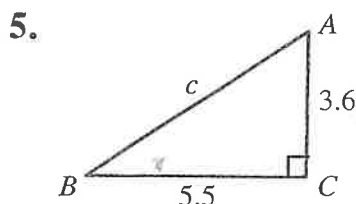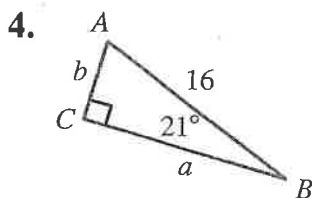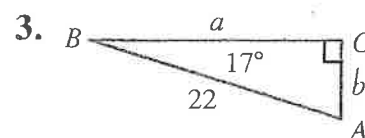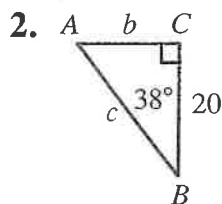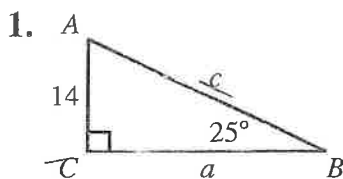
Solve each right triangle *ABC* ($\angle C = 90°$) given the measure of one angle and the length of one side.

7. $\angle A = 58°$, $c = 27$

8. $\angle B = 29°$, $c = 14$

9. $\angle B = 15.1°$, $c = 10.7$

10. $\angle A = 17.2°$, $c = 29.4$

11. $\angle A = 63°$, $a = 11$

12. $\angle B = 24°$, $b = 36$

13. $\angle B = 42.5°$, $a = 188$

14. $\angle A = 70.5°$, $b = 276$

Solve each right triangle *ABC* ($\angle C = 90°$) given the measure of one angle and the length of one side.

15. $\angle A = 36°41'$, $a = 19.32$

16. $\angle B = 42°35'$, $a = 71.22$

17. $\angle B = 72°28'$, $a = 84.84$

18. $\angle A = 80°12'$, $a = 36.22$

Solve each right triangle *ABC* ($\angle C = 90°$) given the lengths of two sides.

19. $b = 17.62$, $c = 23.91$

20. $b = 13.42$, $c = 26.31$

21. $a = 18.65$, $b = 14.22$

22. $a = 7.613$, $c = 14.05$

23. $a = 1632$, $c = 2015$

24. $a = 1503$, $b = 1635$

Use the given information for triangle *ABC* ($\angle C = 90°$) to express the other five trigonometric functions of $\angle A$ in terms of *t*.
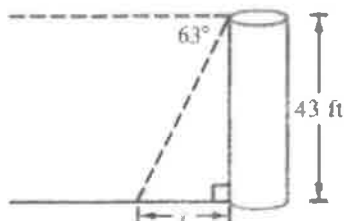
25. $\sin A = \dfrac{3}{t}$

26. $\tan A = \dfrac{1}{t}$

27. $\sec A = t$

28. For any right triangle *DEF* ($\angle F = 90°$), find the numerical value of $(\cos D)^2 + (\cos E)^2 + (\cos F)^2$.

1. The angle of depression is measured from the top of a 43-ft tower to a reference point on the ground. Its value is found to be 63°. How far is the base of the tower from the point on the ground?

```
     63°
  -------____
          |  \      |
          |   \     |
          |    \    | 43 ft
          |     \   |
          |      \  |
          |___x___\_|
```

2. A closed-circuit television camera is mounted on a wall 7.4 ft above a security desk in an office building. It is used to view an entrance door 9.3 ft from the desk. Find the angle of depression from the camera lens to the entrance door.

```
   [TV]- - - - - - - - - - - -
       |  \
  7.4 ft|   \
       |    \        door
  desk |_____
          9.3 ft
```
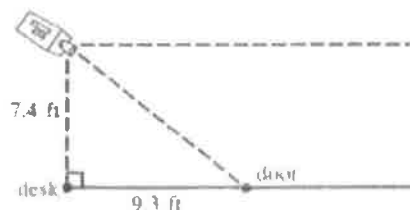
3. The angle of elevation from the bottom of the world's longest slide, located in Peru, Vermont, is approximately 10.3°. The slide has a vertical drop of 821 ft. Find the length of the slide.

4. The extension ladder on top of a 6.0-ft high hook and ladder truck is 150 ft long. If the angle of elevation of the ladder is 70°, to what height on a building will the ladder reach?

```
              /|
       150 ft/ | x
            /  |
           / 70°|
     [truck]---_|
                | 6.0 ft
```
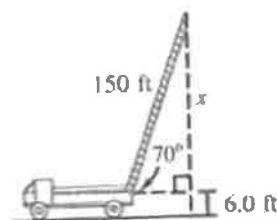
5. A ranger's tower is located 44 m from a tall tree. From the top of the tower, the angle of elevation to the top of the tree is 28°, and the angle of depression to the base of the tree is 36°. How tall is the tree?

6. An engineer determines that the angle of elevation from her position to the top of a tower is 52°. She measures the angle of elevation again from a point 47 m farther from the tower and finds it to be 31°. Both positions are due east of the town. Find the height of the tower.

```
- - - - - - - - - - - - - - - ▓
                         /  / ▓
                       /   /  ▓
                     /    /   ▓
                   /     /    ▓
                 / 31°  / 52°  ▓
               /_____/_____▓
               |- 47 m -|
```