7.4 Practice Solutions

Directions: Find the value of each trigonometric ratio.

1) \[ \cos A = \frac{40}{50} = \frac{4}{5} \]
   \[ \tan A = \frac{30}{40} = \frac{3}{4} \]
   \[ \sin A = \frac{30}{50} = \frac{3}{5} \]

2) \[ \cos A = \frac{16}{20} = \frac{4}{5} \]
   \[ \tan A = \frac{12}{20} = \frac{3}{5} \]
   \[ \sin A = \frac{12}{20} = \frac{3}{5} \]

3) \[ \cos X = \frac{16}{34} = \frac{8}{17} \]
   \[ \tan X = \frac{30}{16} = \frac{15}{8} \]
   \[ \sin X = \frac{30}{34} = \frac{15}{17} \]

4) \[ \cos Z = \frac{40}{41} \]
   \[ \tan Z = \frac{9}{40} \]
   \[ \sin Z = \frac{9}{41} \]

Directions: Find the missing side. Round to the nearest tenth.

5) \[ \sin 71 = \frac{x}{11} \]
   \[ 10.4 = x \]

6) \[ \sin 36 = \frac{x}{14} \]
   \[ 8.2 = x \]

7) \[ \sin 50 = \frac{x}{15} \]
   \[ \cos 50 = \frac{15}{x} \]
   \[ x = 23.3 \]

8) \[ \sin 24 = \frac{x}{13} \]
   \[ 5.3 = x \]

9) \[ \tan 58 = \frac{11}{x} \]
   \[ x = \frac{11}{\tan 58} \]
   \[ x = 6.9 \]

10) \[ \sin 22 = \frac{x}{13} \]
    \[ 13 \sin 22 = x \]
    \[ 9.9 = x \]

11) \[ \cos 48 = \frac{15}{x} \]
    \[ x = \frac{15}{\cos 48} \]
    \[ x = 22.4 \]

12) \[ \tan 15 = \frac{x}{18} \]
    \[ 4.8 = x \]

13) \[ \cos 62 = \frac{16}{x} \]
    \[ x = \frac{16}{\cos 62} \]
    \[ x = 34.1 \]
Directions: For each situation draw a picture and then solve. Round to the nearest tenth if necessary.

14) A flagpole casts a shadow that is 137 feet long. The angle of elevation between from the end of the shadow to the top of the flagpole is 25°. How tall is the flagpole?

\[ \tan 25 = \frac{x}{137} \]

\[ 137 \cdot \tan 25 = x \]

\[ x = 63.9 \text{ feet} \]

15) An archer shoots an arrow with an angle of elevation of 42° at a target that is 50 feet off the ground. How far did the arrow travel in the air?

\[ \sin 92 = \frac{50}{x} \]

\[ \frac{50}{\sin 92} = x \]

\[ x = 74.7 \text{ feet} \]

16) An escalator has a vertical rise of 196 feet and rises at an angle of 10.4°. How long is the escalator?

\[ \sin 16.4 = \frac{196}{x} \]

\[ x = \frac{196}{\sin 10.4} \]

\[ x = 1085.8 \text{ ft} \]