7-1 Additional Practice

Trigonometric Functions and Acute Angles

For Items 1 and 2, use $\triangle ABC$.

1. Write the six trigonometric ratios for $\angle A$.

   $\sin A = \dfrac{5}{13}$ $\qquad$ $\cos A = \dfrac{12}{13}$ $\qquad$ $\tan A = \dfrac{5}{12}$

   $\csc A = \dfrac{13}{5}$ $\qquad$ $\sec A = \dfrac{13}{12}$ $\qquad$ $\cot A = \dfrac{12}{5}$

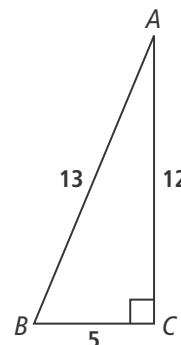2. Write the six trigonometric ratios for $\angle B$.

   $\sin B = \dfrac{12}{13}$ $\qquad$ $\cos B = \dfrac{5}{13}$ $\qquad$ $\tan B = \dfrac{12}{5}$

   $\csc B = \dfrac{13}{12}$ $\qquad$ $\sec B = \dfrac{13}{5}$ $\qquad$ $\cot B = \dfrac{5}{12}$

   (Triangle ABC with vertices A at top, B at bottom left, C at bottom right. Right angle at C. Side AB = 13, side AC = 12, side BC = 5.)

3. What are the trigonometric ratios of θ in a right triangle with the given value $\tan A = \dfrac{9}{40}$?

   $\sin \theta = \dfrac{9}{41}$ $\qquad$ $\cos \theta = \dfrac{40}{41}$ $\qquad$ $\tan \theta = \dfrac{9}{40}$

   $\csc \theta = \dfrac{41}{9}$ $\qquad$ $\sec \theta = \dfrac{41}{40}$ $\qquad$ $\cot \theta = \dfrac{40}{9}$

4. A kite has a string that is 300 ft long. The flying kite forms a 62° angle with a horizontal line running parallel to the ground. The bottom end of the string is 6 ft off the ground. How high is the kite? Round your answer to the nearest tenth. **270.9 ft**

Find each length.

5. the length of the hypotenuse of a 45°-45°-90° triangle with a leg of 12 $\mathbf{12\sqrt{2}}$

6. the length of the longer leg of a 30°-60°-90° triangle with a hypotenuse of 14, when $\theta = 60°$ $\mathbf{7\sqrt{3}}$

What is the cofunction identity for the given trigonometric ratio?

7. $\sin \theta = \mathbf{\cos(90° - \theta)}$ $\qquad$ 8. $\sec \theta = \mathbf{\csc(90° - \theta)}$ $\qquad$ 9. $\tan \theta = \mathbf{\cot(90° - \theta)}$

10. Given the value of the hypotenuse c for a 30°-60°-90° triangle, write the equations to represent sides a and b in terms of c. Assume a is the shorter leg.

    $\mathbf{a = \dfrac{c}{2}, \ b = \dfrac{c}{2}\sqrt{3}}$

11. Given the value of the hypotenuse c for a 45°-45°-90° triangle, write the equations to represent sides a and b in terms of c.

    $\mathbf{a = \dfrac{c}{\sqrt{2}}, \ b = \dfrac{c}{\sqrt{2}}}$