Reciprocal Trigonometric Ratios

1. Determine the exact value without a calculator.
   a) $\csc\left(\frac{\pi}{6}\right)$
   b) $\sec\left(\frac{2\pi}{3}\right)$
   c) $\cot\left(\frac{5\pi}{4}\right)$
   d) $\sec\left(-\frac{\pi}{3}\right)$

2. Determine the exact value without a calculator.
   a) $\sec\left(\frac{7\pi}{3}\right)$
   b) $\csc\left(-\frac{11\pi}{6}\right)$
   c) $\cot\left(\frac{13\pi}{4}\right)$

3. Evaluate the following. State "undefined" if appropriate.
   a) $\csc 0°$
   b) $\sec 90°$
   c) $\csc(-30°)$
   d) $\sec 270°$
   e) $\cot \pi$

4. List all values of $\boldsymbol{\theta}$in $[\mathbf{0}, \mathbf{2\pi})$for which:
   a) $\csc\theta$is undefined
   b) $\sec\theta$is undefined
   c) $\cot\theta$is undefined

5. 5. Rewrite each equation using $\mathbf{\sin\theta}$, $\mathbf{\cos\theta}$, or $\mathbf{\tan\theta}$. Do not solve.
   a) $\csc\ \theta = 2$
   b) $\sec\ \theta = -2$
   c) $\cot\ \theta = -1$

6. Solve for all $\boldsymbol{\theta}$in $[\mathbf{0°}, \mathbf{360°})$.
   a) $\csc\ \theta = 2$
   b) $\sec\ \theta = -2$
   c) $\cot\ \theta = -1$

7. A right triangle has:
   - hypotenuse 13
   - adjacent side 5

   Determine the exact values of all six trigonometric ratios.

8. In a right triangle with acute angle θ, $\tan\ \theta = \frac{7}{24}$. Find the exact values of the other five trigonometric ratios.

9. The point $\left(-\frac{3}{5}, \frac{4}{5}\right)$ lies on the unit circle. Determine the six trigonometric ratios.

10. Suppose $\sin\ \theta = -\frac{5}{8}$. Determine the exact values of the other five trigonometric ratios.

11. Suppose $\cos\ \theta = -\frac{\sqrt{6}}{5}$. Determine the exact values of the other five trigonometric ratios.

12. Suppose $\sec\ \theta = -\frac{7}{2\sqrt{3}}$. Determine the exact values of the other five trigonometric ratios.

13. Determine whether each equation is possible. Explain your reasoning.
    a) $\sec\ \theta = \frac{1}{2}$
    b) $\csc\ \theta = -3$
    c) $\sin\ \theta = 1.2$
    d) $\cot\ \theta = 0$