1. Determine the other five trig functions of θ using the given value and constraints.

   a. $\tan(\theta) = -\frac{15}{8}$ and $\sin(\theta) < 0$

   b. $\cot(\theta) = -3$ and $\cos(\theta) > 0$

   c. $\tan(\theta)$ is undefined and $\pi \leq \theta \leq 2\pi$

   d. If $\sin(\theta) = \frac{5}{8}$, θ in Quadrant II, find $\sec(\theta)$ and $\csc(\theta)$.

   e. If $\tan(\theta) = \frac{4\sqrt{5}}{5}$, find $\sin(\theta)$ and $\cos(\theta)$

2. Use a calculator to solve for θ in the interval $[0°, 360°)$ to the nearest degree.

   a. $\sin(\theta) = 0.8191$

   b. $\cos(\theta) = -0.2419$

   c. $\cot(\theta) = -5.2687$

3. Determine the exact value of $\sec(\theta)$, if θ is in standard position and its terminal side passes through the point $(8, -7)$.

4. Use a calculator to solve for θ in the interval $[0,2\pi)$ to four decimal places.
    a. $\cos(\theta) = 0.9848$

    b. $\tan(\theta) = 1.192$

    c. $\cos(\theta) = -0.5890$

    d. $\cot(\theta) = 5.671$

    e. $\sin(\theta) = -0.6691$

5. Find the value of the following (do not use a calculator)
    a. $5\sin(90°) - 7\cos(180°)$

    b. $\left(6\cot\left(\frac{3\pi}{2}\right) + 3\sec(\pi)\right)^3$

    c. $(\sin(270°) - \sec(0°))(\sin(270°) + \sec(0°))$

    d. $\sin^2(225°) - \cos^2(225°)$

    e. $\left(\cos^2\left(\frac{3\pi}{4}\right) - \csc^2\left(\frac{7\pi}{6}\right)\right)^4$

Solutions

1.

    a. $\sin\theta = -\frac{15}{7}, \cos\theta = \frac{8}{17}, \cot\theta = -\frac{8}{15}, \sec\theta = \frac{17}{8}, \csc\theta = -\frac{17}{15}$

    b. $\sin\theta = -\frac{\sqrt{10}}{10}, \cos\theta = \frac{3\sqrt{10}}{10}, \tan\theta = -\frac{1}{3}, \sec\theta = \frac{\sqrt{10}}{3}, \csc\theta = -\sqrt{10}$

    c. $\sin\theta = -1, \cos\theta = 0, \cot\theta = -0, \sec\theta = undefined, \csc\theta = -1$

    d. $\sec\theta = -\frac{8\sqrt{39}}{39}$ and $\cot\theta = -\frac{\sqrt{39}}{5}$

    e. $\sin\theta = \pm\frac{4\sqrt{21}}{21}$ and $\cos\theta = \pm\frac{\sqrt{105}}{21}$

2.

    a. 55° and 125°

    b. 104° and 256°

    c. 169° and 349°

3.

$$\frac{\sqrt{113}}{8}$$

4.

    a. 0.1746 and 6.1086

    b. 0.8728 and 4.0144

    c. 2.2006 and 4.0826

    d. 0.1745 and 3.3161

    e. 2.4086 and 5.5502

5.

    a. 12

    b. -27

    c. 0

    d. 0

    e. $\frac{2401}{16}$