59. $\sin t = \frac{3}{5}$ and t is in quadrant II, so the terminal point determined by t is $P\left(x, \frac{3}{5}\right)$. Since P is on the unit circle $x^2 + \left(\frac{3}{5}\right)^2 = 1$. Solving for x gives $x = \pm\sqrt{1 - \frac{9}{25}} = \pm\sqrt{\frac{16}{25}} = \pm\frac{4}{5}$. Since t is in quadrant III, $x = -\frac{4}{5}$. Thus the terminal point is $P\left(-\frac{4}{5}, \frac{3}{5}\right)$. Thus, $\cos t = -\frac{4}{5}$, $\tan t = -\frac{3}{4}$, $\csc t = \frac{5}{3}$, $\sec t = -\frac{5}{4}$, $\cot t = -\frac{4}{3}$.

61. $\tan t = -\frac{3}{4}$ and $\cos t > 0$, so t is in quadrant IV. Since $\sec^2 t = \tan^2 t + 1$ we have $\sec^2 t = \left(-\frac{3}{4}\right)^2 + 1 = \frac{9}{16} + 1 = \frac{25}{16}$. Thus $\sec t = \pm\sqrt{\frac{25}{16}} = \pm\frac{5}{4}$. Since $\cos t > 0$, we have $\cos t = \dfrac{1}{\sec t} = \dfrac{1}{\frac{5}{4}} = \frac{4}{5}$. Let $P\left(\frac{4}{5}, y\right)$. Since $\tan t \cdot \cos t = \sin t$ we have $\sin t = \left(-\frac{3}{4}\right)\left(\frac{4}{5}\right) = -\frac{3}{5}$. Thus, the terminal point determined by t is $P\left(\frac{4}{5}, -\frac{3}{5}\right)$, and so $\sin t = -\frac{3}{5}$, $\cos t = \frac{4}{5}$, $\csc t = -\frac{5}{3}$, $\sec t = \frac{5}{4}$, $\cot t = -\frac{4}{3}$.

63. $\sec t = 2$ and $\sin t < 0$, so t is in quadrant IV. Thus, $\cos t = \frac{1}{2}$ and the terminal point determined by t is $P\left(\frac{1}{2}, y\right)$. Since P is on the unit circle $\left(\frac{1}{2}\right)^2 + y^2 = 1$. Solving for y gives $y = \pm\sqrt{1 - \frac{1}{4}} = \pm\sqrt{\frac{3}{4}} = \pm\frac{\sqrt{3}}{2}$. Since t is in quadrant IV, $y = -\frac{\sqrt{3}}{2}$. Thus the terminal point is $P\left(\frac{1}{2}, -\frac{\sqrt{3}}{2}\right)$, and so $\sin t = -\frac{\sqrt{3}}{2}$, $\cos t = \frac{1}{2}$, $\tan t = -\sqrt{3}$, $\csc t = -\frac{2}{\sqrt{3}} = -\frac{2\sqrt{3}}{3}$, $\cot t = -\frac{1}{\sqrt{3}} = -\frac{\sqrt{3}}{3}$.

65. $\sin t = -\frac{1}{4}$, $\sec t < 0$, so t is in quadrant III. So the terminal point determined by t is $P\left(x, -\frac{1}{4}\right)$. Since P is on the unit circle $x^2 + \left(-\frac{1}{4}\right)^2 = 1$. Solving for x gives $x = \pm\sqrt{1 - \frac{1}{16}} = \pm\sqrt{\frac{15}{16}} = \pm\frac{\sqrt{15}}{4}$. Since t is in quadrant III, $x = -\frac{\sqrt{15}}{4}$. Thus, the terminal point determined by t is $P\left(-\frac{\sqrt{15}}{4}, -\frac{1}{4}\right)$, and so $\cos t = -\frac{\sqrt{15}}{4}$, $\tan t = \frac{1}{\sqrt{15}} = \frac{\sqrt{15}}{15}$, $\csc t = -4$, $\sec t = -\frac{4}{\sqrt{15}} = -\frac{4\sqrt{15}}{15}$, $\cot t = \sqrt{15}$.