1. Determine the **exact** values of the following trig functions:

- $\tan\left(\frac{5\pi}{3}\right)$

  ![Diagram of \(\tan\left(\frac{5\pi}{3}\right)\)]

- $\csc\left(-\frac{7\pi}{4}\right)$

  ![Diagram of \(\csc\left(-\frac{7\pi}{4}\right)\)]

- $\sin\left(\frac{23\pi}{6}\right)$

  ![Diagram of \(\sin\left(\frac{23\pi}{6}\right)\)]

- $\cos\left(-\frac{11\pi}{2}\right)$

  ![Diagram of \(\cos\left(-\frac{11\pi}{2}\right)\)]

- $\sec(5\pi)$

  ![Diagram of \(\sec(5\pi)\)]

2. If the point \((-2, 3)\) is on the terminal side of the angle \(\alpha\) (in standard position), what are the **exact** values of $\sin \alpha$, $\sec \alpha$ and $\tan \alpha$?

  ![Diagram of point \((-2, 3)\) and \(\alpha\)]
3. Find the **exact** values for the following trig functions of $\theta$, given $\tan \theta = -\sqrt{15}$.
(Hint: You may want to use reference triangles and/or trig identities.)

- $\sec \theta$

$$\sec \theta = \frac{y}{1} = \frac{4}{1}$$

- $\sin(-\theta)$

- $\tan \left( \frac{\pi}{2} - \theta \right)$

**complementary angle!**

$$\tan \left( \frac{\pi}{2} - \theta \right) = \cot \theta = \frac{1}{\sqrt{15}}$$

4. Use trig identities, including the Complementary Angle Theorem, to find the **exact** value of:

$$\tan(75^\circ) = \frac{\cos(15^\circ)}{\sin(-15^\circ)} - 4\left(\sin^2(70^\circ) + \sin^2(20^\circ)\right)$$

*Show all intermediate steps. No decimal approximations should be used anywhere in your work.*