Problem Statements

1. Convert 75° to radians.

2. A circular sector created by a central angle of $\frac{3}{5}$ radians has an area of 1080 ft$^2$, determine the radius of the circle.

3. The planet Neptune has an orbit that is nearly circular. It orbits the Sun at a distance of 4497 million kilometers and completes one revolution every 165 years. How long is a full path of Neptune around the Sun? Then find the linear velocity of Neptune as it orbits the Sun.

4. Evaluate the six trigonometric functions for the following angles:
   a) $\sin \frac{4\pi}{3}$
   b) $\cos \frac{4\pi}{3}$
   c) $\tan \frac{4\pi}{3}$
   d) $\cot \frac{4\pi}{3}$
   e) $\sec \frac{4\pi}{3}$
   f) $\csc \frac{4\pi}{3}$

   a) $\sin 315°$
   b) $\cos 315°$
   c) $\tan 315°$
   d) $\cot 315°$
   e) $\sec 315°$
   f) $\csc 315°$

5. Find the exact value of the six trigonometric functions, given the following:
   hypotenuse = 29, side opposite the angle = 21

6. Given $\sin \theta = \frac{4}{7}$ and $\theta$ in Q1, use the trigonometric identities to find the exact value of each:
   a. $\cos(\theta) =$
   b. $\cot(\theta) =$
   c. $\csc(\theta) =$
   d. $\tan(90° - \theta) =$
7. From a point on the ground 47 feet from the foot of a tree, the angle of elevation of the top of the tree is 30°. Find the height of the tree.

8. Find the exact value of $x$ and $y$.

![Diagram](image)

9. Let $(-24, 7)$ be a point on the terminal side of $\theta$. Find the sine, cosine, and tangent of $\theta$.

10. Let $(3, -8)$ be a point on the terminal side of $\theta$. Find the sine, cosine, and tangent of $\theta$.

11. Given $\sin(\theta) = -\frac{5}{7}$ and $\tan(\theta) > 0$, find $\tan(\theta)$ and $\sec(\theta)$.