Example

Find the values of each of the six trigonometric functions of the angle $\theta$ in the figure below. Simplify your answers as much as possible. Enter exact answers (do not approximate with decimals).

\[ \begin{array}{c}
5 \\
\theta \\
4
\end{array} \]

**SOLUTION:**

The triangle is a right triangle, so from the Pythagorean theorem, the length of the base is $\sqrt{5^2 - 4^2} = 3$. Then the picture becomes

\[ \begin{array}{c}
5 \\
\theta \\
4 \\
3
\end{array} \]

So now, directly from their definitions, we can compute:

\[
\begin{align*}
\sin \theta &= \frac{4}{5} \\
\cos \theta &= \frac{3}{5} \\
\tan \theta &= \frac{4}{3} \\
\csc \theta &= \frac{5}{4} \\
\sec \theta &= \frac{5}{3} \\
\cot \theta &= \frac{3}{4}
\end{align*}
\]