Derivation:
Given:

$$
\begin{aligned}
&1) \quad \tau_3 = \tau_2 \cos(\theta) + \tau_1 \cos(\gamma) \\
&2) \quad \tau_1 \sin(\gamma) = \tau_2 \sin(\theta)
\end{aligned}
$$

Rewriting equation 2, we get:

$$3) \quad \frac{\tau_1}{\tau_2} = \frac{\sin(\theta)}{\sin(\gamma)}$$

We can rewrite Eq. 1 as:

$$
\begin{aligned}
&\frac{\tau_3 - \tau_2 \cos(\theta)}{\tau_1 \cos(\gamma)} = 1 \\
&\frac{\tau_3}{\tau_1 \cos(\gamma)} - \frac{\tau_2 \cos(\theta)}{\tau_1 \cos(\gamma)} = 1 \\
&\frac{\tau_3}{\tau_1 \cos(\gamma)} = 1 + \frac{\tau_2}{\tau_1} \cdot \frac{\cos(\theta)}{\cos(\gamma)} \\
&\frac{\tau_3}{\tau_1} = \cos(\gamma) \left(1 + \frac{\sin(\gamma) \cos(\theta)}{\cos(\gamma) \sin(\theta)} \right)
\end{aligned}
$$

Therefore,

$$\frac{\tau_1}{\tau_3} = \frac{1}{\cos(\gamma) \left(1 + \frac{\sin(\gamma) \cos(\theta)}{\cos(\gamma) \sin(\theta)} \right)}$$

The derivation of

$$\frac{\tau_2}{\tau_3} = \frac{1}{\cos(\theta) \left(1 + \frac{\sin(\theta) \cos(\gamma)}{\cos(\theta) \sin(\gamma)} \right)}$$

is *analogous*!