

Warm-up #8: Verifying

$$\begin{aligned} 1. \quad & \tan^2\theta - \tan^2\theta\sin^2\theta = \boxed{\sin^2\theta} \\ & = \tan^2\theta(1 - \sin^2\theta) \\ & = \tan^2\theta \cdot \cos^2\theta \\ & = \frac{\sin^2\theta}{\cos^2\theta} \cdot \cos^2\theta \\ & = \boxed{\sin^2\theta} \end{aligned}$$

$$\begin{aligned} 2. \quad & \sin^4\theta + 2\sin^2\theta\cos^2\theta + \cos^4\theta = \boxed{1} \\ & = (\sin^2\theta + \cos^2\theta)(\sin^2\theta + \cos^2\theta) \\ & = (\sin^2\theta + \cos^2\theta)^2 \\ & = 1^2 \\ & = \boxed{1} \end{aligned}$$