

$$p = \sin\theta, \quad q = 4\cot\theta$$

Show that  $p^2q^2 = 16(1 - p^2)$

**Solution:**

$$\begin{aligned} p^2q^2 &= \sin^2\theta * 4^2 * \cot^2\theta = 16\sin^2\theta * \frac{\cos^2\theta}{\sin^2\theta} = 16\cos^2\theta = 16(1 - \sin^2\theta) \\ &\equiv 16(1 - p^2) \end{aligned}$$