

1) Verify that $1 - \sec(x) \cos^3(x) = \sin^2(x)$.

$$\begin{aligned} & 1 - \sec(x) \cos^3(x) \\ &= 1 - \frac{1}{\cos(x)} \cdot \cos^3(x) \\ &= 1 - \cos^2(x) \\ &= \sin^2(x) \end{aligned}$$