

Exercise 321

Simplify the following trigonometric expressions.

$$\cos^2 x - \sin^2 x$$

Solution

Simplify the expression.

$$\begin{aligned}\cos^2 x - \sin^2 x &= \left[\frac{1}{2}(1 + \cos 2x) \right] - \left[\frac{1}{2}(1 - \cos 2x) \right] \\ &= \left(\frac{1}{2} + \frac{1}{2} \cos 2x \right) - \left(\frac{1}{2} - \frac{1}{2} \cos 2x \right) \\ &= \cos 2x\end{aligned}$$