

Question 5

Evaluate the integral

$$\int \frac{dx}{1 + \sin x}.$$

Question 5 - Solution

The integrand is defined wherever $1 + \sin x \neq 0$.

A primitive valid on each such interval is

$$\boxed{-\frac{\cos x}{1 + \sin x} + C.}$$

Indeed, the quotient rule gives

$$\frac{d}{dx} \left(-\frac{\cos x}{1 + \sin x} \right) = \frac{\sin x(1 + \sin x) + \cos^2 x}{(1 + \sin x)^2} = \frac{1}{1 + \sin x}.$$

This expression introduces no extra excluded points.