

置換積分

$y = \cos x$ とおくと $dy/dx = -\sin x$.

公式 3.2 (8)

$$\begin{aligned} I &= - \int_1^{-1} \frac{dy}{y^2 + 1} = [\tan^{-1} y]_{-1}^1 \\ &= \frac{\pi}{4} + \frac{\pi}{4} = \frac{\pi}{2} \end{aligned}$$