

FORMULA 4.388.1

$$\int_0^{\pi/4} \ln \sin x \frac{\sin^{2n} x}{\cos^{2n+2} x} dx = \frac{1}{2n+1} \left[\frac{1}{2} \ln 2 + (-1)^n \frac{\pi}{4} + \sum_{k=0}^{n-1} \frac{(-1)^k}{2n-2k-1} \right]$$