FORMULA 4.392.1

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