FORMULA 4.227.4

$$\begin{aligned}\int_0^{\pi/4} \ln^n \tan x \, dx &= (-1)^n n! \sum_{k=0}^{\infty} \frac{(-1)^k}{(2k+1)^{n+1}} \\ &= \frac{1}{2}\left(\frac{\pi}{2}\right)^{n+1} |E_n| \text{ if } n \text{ is even}\end{aligned}$$