PROOF OF FORMULA 4.227.1

$$\int_0^u \ln\tan x\,dx = L(u) + L\left(\frac{\pi}{2} - u\right) - L\left(\frac{\pi}{2}\right)$$

$$\begin{aligned}\int_0^u \ln\tan x\,dx &= \int_0^u \ln\sin x\,dx - \int_0^u \ln\cos x\,dx \\ &= L\left(\frac{\pi}{2} - u\right) - L\left(\frac{\pi}{2}\right) - [-L(u)]\end{aligned}$$

according to 4.224.1 and .224.4.