

**PROOF OF FORMULA 4.227.10**

$$\int_0^{\pi/2} \ln(1 + \tan x) dx = \frac{\pi}{4} \ln 2 + G$$

Write the integral as

$$\int_0^{\pi/2} \ln(1 + \tan x) dx = \int_0^{\pi/2} \ln(\sin x + \cos x) dx - \int_0^{\pi/2} \ln \cos x dx.$$

The result now follows from the values

$$\int_0^{\pi/2} \ln(\sin x + \cos x) dx = -\frac{\pi}{4} \ln 2 + G$$

and

$$\int_0^{\pi/2} \ln \cos x dx = -\frac{\pi}{2} \ln 2$$

given as entries **4.225.4** and **4.224.6**, respectively.