

PROOF OF FORMULA 4.291.11

$$\int_1^{\infty} \frac{\ln(x-1)}{1+x^2} dx = \frac{\pi}{8} \ln 2$$

The change of variables $t = 1/x$ yields

$$\int_1^{\infty} \frac{\ln(x-1)}{1+x^2} dx = \int_0^1 \frac{\ln(1-t)}{1+t^2} dt - \int_0^1 \frac{\ln t}{1+t^2} dt.$$

These integrals have been evaluated in entries 4.291.10 and 4.231.12 with values $\frac{\pi}{8} \ln 2 - G$ and $-G$ respectively. This gives the result.