PROOF OF FORMULA 4.234.3

$$\int_0^\infty \frac{1+x^2}{(1+x^2)^2} \ln x \, dx = 0$$

The change of variables $t = 1/x$ in the integral over $[1, \infty)$ shows that this is minus the integral over $[0, 1]$. Therefore the total integral vanishes.