

FORMULA 4.223.1

$$\int_0^{\infty} \ln(1 + e^{-x}) dx = \frac{\pi^2}{12}$$

Let $t = e^{-x}$ to obtain

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

This integral is evaluated in **4.291.1**. Its value is $\pi^2/12$.