

PROOF OF FORMULA 4.291.4

$$\int_0^1 \ln\left(1 - \frac{x}{2}\right) \frac{dx}{x} = \frac{1}{2} \ln^2 2 - \frac{\pi^2}{12}$$

The change of variable $t = x/2$ gives

$$\int_0^1 \ln\left(1 - \frac{x}{2}\right) \frac{dx}{x} = \int_0^{1/2} \ln(1-t) \frac{dt}{t}.$$

This integral is evaluated in 4.291.3 to give the result.