

PROOF OF FORMULA 4.331.1

$$\int_0^{\infty} e^{-\mu x} \ln x \, dx = -\frac{1}{\mu} (\gamma + \ln \mu)$$

Differentiate with respect to the parameter ν the identity

$$\int_0^{\infty} x^{\nu-1} e^{-\mu x} \, dx = \mu^{-\nu} \Gamma(\nu)$$

and put $\nu = 1$ to obtain the result.