

**PROOF OF FORMULA 4.215.2**

$$\int_0^1 \left(\ln \frac{1}{x}\right)^{-\mu} dx = \Gamma(1 - \mu)$$

Let  $t = \ln \frac{1}{x}$  to produce

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

This is the standard integral representation of the gamma function.