PROOF OF FORMULA 3.478.1

$$\int_0^\infty x^{\nu-1} e^{-\mu x^p}\, dx = \frac{1}{p\,\mu^{\nu/p}}\, \Gamma\left(\frac{\nu}{p}\right)$$

Let $t = \mu x^p$ to obtain

$$\int_0^\infty x^{\nu-1} e^{-\mu x^p}\, dx = \frac{1}{p}\mu^{-\nu/p} \int_0^\infty t^{\nu/p-1} e^{-t}\, dt.$$

The last integral is recognized as the value $\Gamma\left(\frac{\nu}{p}\right)$.