PROOF OF FORMULA 3.351.7

$$\int_0^a xe^{-\mu x}\,dx = \frac{1}{\mu^2} - \frac{e^{-a\mu}}{\mu^2}(1+\mu a)$$

Entry **3.351.1** states that

$$\int_0^a x^n e^{-\mu x}\,dx = \frac{n!}{\mu^{n+1}} - e^{-a\mu}\sum_{k=0}^{n}\frac{n!}{k!}\frac{a^k}{\mu^{n-k+1}}.$$

The result follows by taking $n = 1$.