

FORMULA 4.222.8

$$\int_0^{\infty} \ln(1+ax)x^b e^{-x} dx = \sum_{m=0}^b \frac{b!}{(b-m)!} \frac{(-1)^{b-m-1}}{a^{b-m}} e^{1/a} \text{Ei}\left(-\frac{1}{a}\right) + \sum_{m=0}^b \frac{b!}{(b-m)!} \sum_{k=1}^{b-m} \frac{(k-1)!}{(-a)^{b-m-k}}$$