! For an efficient use of these tables, first read `HowTo.pdf`.

T2.71A. Integrands involving exponentials, logarithm functions and powers of $(a + b\,x)$ on the interval $(0, 1)$.

1. $\displaystyle\int_0^1 (1-x)e^{-x} \ln\, x\, dx = \frac{1-e}{e}.$

2. $\displaystyle\int_0^1 e^{\mu x}(\mu x^2 + 2x) \ln\, x\, dx = \frac{1}{\mu^2}\,[(1-\mu)\, e^{\mu} - 1].$

3. $\displaystyle\int_0^1 (\mu x + n + 1)x^n e^{\mu x} \ln\, x\, dx = e^{\mu}\sum_{k=0}^{n}(-1)^{k-1}\frac{n!}{(n-k)!\mu^{k+1}} + (-1)^n \frac{n!}{\mu^{n+1}}, \quad \mu \neq 0.$

4. $\displaystyle\int_0^1 e^{\mu x}\frac{x^{p-1} - x^{q-1}}{\ln\, x}\, dx = \sum_{k=0}^{\infty}\frac{\mu^k}{k!} \ln\, \frac{p+k}{q+k}, \quad \Re\{\mu\} > 0,\, p > 0,\, q > 0.$

5. $\displaystyle\int_0^1 xe^x \ln\,(1-x)\, dx = 1 - e.$

6. $\displaystyle\int_0^1 x(1-x)(2-x)\, e^{-(1-x)^2} \ln\,(1-x)\, dx = \frac{1-e}{4e}.$

7. $\displaystyle\int_0^1 \frac{x\, \ln\, x}{(1+x)^4}\, dx = \frac{1}{6}\,\left[\frac{1}{4} - \ln\, 2\right].$
