

C4282

! For an efficient use of these tables, first read [HowTo.pdf](#).

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**T2.37A.** Integrands involving algebraic functions of exponentials and powers of  $(a + bx)$  on the interval  $(0, 1)$ .

$$1. \int_0^1 \frac{e^{x^2} - 1}{x^2} dx = \sum_{k=1}^{\infty} \frac{1}{k!(2k-1)}.$$

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$$2. \int_0^1 \frac{\exp(1 - 1/x) - x^\nu}{x(1-x)} dx = \psi(\nu), \quad \Re\{\nu\} > 0.$$

$$3. \int_0^1 \left\{ \frac{n \exp(1 - x^{-n})}{1 - x^n} - \frac{x^{np}}{1 - x} \right\} \frac{dx}{x} = \frac{1}{n} \sum_{k=1}^n \psi\left(p + \frac{k-1}{n}\right), \quad p > 0.$$

$$4. \int_0^1 \left\{ \frac{n \exp(1 - x^{-n})}{1 - x^n} - \frac{\exp(1 - \frac{1}{x})}{1 - x} \right\} \frac{dx}{x} = -\ln n.$$

$$5. \int_0^1 x^{-x} dx = \int_0^1 e^{-x \ln x} dx = \sum_{k=1}^{\infty} k^{-k}.$$

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