

C4282

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

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T3.01B. Powers of x and binomials of the form $(a + bx)$ on the interval $(1, \infty)$.

$$1. \int_1^\infty (x-1)^{p-1/2} \frac{dx}{x} = \pi \sec p\pi, \quad -\frac{1}{2} < p < \frac{1}{2}.$$

$$2. \int_1^\infty \frac{dx}{(a-bx)(x-1)^\nu} = -\frac{\pi}{b} \csc \nu\pi \left(\frac{b}{b-a} \right)^\nu, \quad a < b, \ b > 0, \ 0 < \nu < 1.$$

$$3. \int_1^\infty x^{\lambda-\nu} (x-1)^{\nu-\mu-1} (\alpha x-1)^{-\lambda} dx = \alpha^{-\lambda} \text{B}(\mu, \nu-\mu) {}_2F_1(\nu, \mu; \lambda; \alpha^{-1}),$$

$$1 + \Re\{\nu\} > \Re\{\lambda\} > \Re\{\mu\}, \quad |\arg(\alpha-1)| < \pi.$$

$$4. \int_1^\infty \frac{(x-1)^{p-1}}{x^2} dx = (1-p)\pi \csc p\pi, \quad -1 < p < 1.$$

$$5. \int_1^\infty \frac{(x-1)^{1-p}}{x^3} dx = \frac{1}{2}p(1-p)\pi \csc p\pi, \quad 0 < p < 1.$$

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