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

T2.02B. Powers of x and binomials of the form $(a+b\,x)$ on the interval $(0,y)$.

1. $$\int_0^y x^{\nu-1}(y-x)^{\mu-1}\,dx = \begin{cases} y^{\mu+\nu-1}\mathrm{B}(\mu,\,\nu), & y \text{ real, and } \Re\{\mu\}>0,\ \Re\{\nu\}>0, \\ \dfrac{n!\,n^{\nu+n}}{\nu(\nu+1)(\nu+2)\ldots(\nu+n)}, & y=n,\ \mu=n+1,\ n\in\mathrm{N}, \text{ and } \Re\{\nu\}>0. \end{cases}$$

2. $$\int_y^\infty x^{-\nu}(x-y)^{\mu-1}\,dx = y^{\mu-\nu}\mathrm{B}(\nu-\mu,\,\mu), \quad \Re\{\nu\}>\Re\{\mu\}>0.$$

3. $$\int_0^y \frac{x^{\mu-1}\,dx}{(1+\beta x)^\nu} = \frac{y^\mu}{\mu}\,{}_2F_1(\nu,\,\mu;\,1+\mu;\,-\beta y), \quad |\arg(1+\beta y)|<\pi,\ \Re\{\mu\}>0.$$

4. $$\int_0^y \frac{x^{\mu-1}\,dx}{1+\beta x} = \frac{y^\mu}{\mu}\,{}_2F_1(1,\,\mu;\,1+\mu;\,-y\beta), \quad |\arg(1+y\beta)|<\pi,\ \Re\{\mu\}>0.$$

5. $$\int_0^y (x+\beta)^\nu(y-x)^{\mu-1}\,dx = \frac{\beta^\nu y^\mu}{\mu}\,{}_2F_1\left(1,\,-\nu;\,1+\mu;\,-\frac{y}{\beta}\right), \quad \left|\arg\frac{y}{\beta}\right|<\pi.$$

6. $$\int_0^y x^{\nu-1}(x+\alpha)^\lambda(y-x)^{\mu-1}\,dx = \alpha^\lambda y^{\mu+\nu-1}\mathrm{B}(\mu,\,\nu)\,{}_2F_1\left(-\lambda,\,\nu;\,\mu+\nu;\,-\frac{y}{\alpha}\right),$$
$$\left|\arg\left(\frac{y}{\alpha}\right)\right|<\pi,\ \Re\{\mu\}>0,\ \Re\{\nu\}>0.$$
