

PROOF OF FORMULA 3.199

$$\int_a^b (x-a)^{\mu-1} (b-x)^{\nu-1} (x-c)^{-\mu-\nu} dx = \frac{(b-a)^{\mu+\nu-1} B(\mu, \nu)}{(b-c)^\mu (a-c)^\nu}$$

Let $t = (x-a)/(b-a)$ to obtain

$$\int_a^b \frac{(x-a)^{\mu-1} (b-x)^{\nu-1}}{(x-c)^{\mu+\nu}} dx = (b-a)^{\mu+\nu-1} \int_0^1 \frac{t^{\mu-1} (1-t)^{\nu-1}}{[bt+a(1-t)-c]^{\mu+\nu}} dt.$$

The result now follows from formula 3.198.