

PROOF OF FORMULA 3.216.2

$$\int_1^{\infty} \frac{x^{\mu-1} + x^{\nu-1}}{(1+x)^{\mu+\nu}} dx = B(\mu, \nu)$$

In the representation

$$B(\mu, \nu) = \int_0^{\infty} \frac{x^{\mu-1} dx}{(1+x)^{\mu+\nu}} = \int_0^1 \frac{x^{\mu-1} dx}{(1+x)^{\mu+\nu}} + \int_1^{\infty} \frac{x^{\mu-1} dx}{(1+x)^{\mu+\nu}}$$

let $t = 1/x$ in the first integral. The result comes directly.