PROOF OF FORMULA 3.216.1

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

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 second integral. The result comes directly.