

PROOF OF FORMULA 3.232

$$\int_0^{\infty} \frac{(c+ax)^{-\mu} - (c+bx)^{-\mu}}{x} dx = \frac{\ln b - \ln a}{c^{\mu}}$$

Frullani's theorem states that

$$\int_0^{\infty} \frac{f(ax) - f(bx)}{x} dx = [f(\infty) - f(0)] \ln \frac{a}{b}.$$

Take $f(x) = (x+c)^{-\mu}$ to obtain the result.