

PROOF OF FORMULA 4.251.3

$$\int_0^1 \frac{x^{a-1} \ln x}{1+x} dx = \beta'(a)$$

The β -function is defined by the integral representation

$$\beta(a) = \int_0^1 \frac{x^{a-1} dx}{1+x}.$$

Now differentiate with respect to the parameter a .