

**PROOF OF FORMULA 4.212.7**

$$\int_1^e \frac{\ln x \, dx}{(1 + \ln x)^2} = \frac{e}{2} - 1$$

Let  $t = 1 + \ln x$  to obtain

$$\int_1^e \frac{\ln x \, dx}{(1 + \ln x)^2} = \frac{1}{e} \int_1^2 \frac{t-1}{t^2} e^t \, dt.$$

Now observe that

$$\frac{t-1}{t^2} e^t \, dt = \frac{d}{dt} \left( \frac{e^t}{t} \right),$$

to obtain the result.