PROOF OF FORMULA 4.331.3

$$\int_0^1 e^{ax} \ln x \, dx = -\frac{1}{a} \int_0^1 \frac{e^{ax} - 1}{x} \, dx.$$

Integrate by parts with $u = \ln x$ and $dv = e^{ax}$. Then $du = dx/x$ and choose $v = (e^{ax} - 1)/a$. This gives the result.