補足 page 4

$$\frac{\mathrm{d}e^{ax}}{\mathrm{d}x}=\lim_{\Delta x\to 0}\frac{e^{a(x+\Delta x)}-e^{ax}}{\Delta x}=e^{ax}\lim_{\Delta x\to 0}\frac{e^{a\Delta x}-1}{\Delta x}$$

$$e^{a\Delta x}-1=u,1+u=e^{a\Delta x},\ln(1+u)=a\Delta x,\Delta x\to 0\Leftrightarrow u\to 0$$

$$\frac{\Delta x}{e^{a\Delta x}-1}=\frac{1}{a}\frac{\ln(1+u)}{u}=\frac{1}{a}\ln(1+u)^{1/u}$$