8) $\dfrac{d}{dt}x\left(t\right)=\dfrac{x\left(t\right)}{t^2\cdot\ln\left(x\left(t\right)\right)} \iff \dfrac{dx}{dt}=\dfrac{1}{t^2}\dfrac{x\left(t\right)}{\ln\left(x\left(t\right)\right)}$

$$\int\frac{\ln\left(x\right)}{x}dx=\int\frac{1}{t^2}dt$$

$$\frac{1}{2}\ln^2 x=-\frac{1}{t}+c\ , \quad t<0\ ,\ 0<x\ ,$$

$$\ln\left(x\right)=\sqrt{-\frac{2}{t}+2c}\ ,$$

$$x\left(t\right)=\exp\left(\sqrt{-\frac{2}{t}+2c}\right)\ ,$$

ELL: $\quad x'\left(t\right)=\dfrac{d}{dt}\exp\left(\sqrt{-\dfrac{2}{t}+2c}\right)=\dfrac{\sqrt{2}}{2t^2}\dfrac{\exp\left(\sqrt{2}\sqrt{\frac{1}{t}\left(ct-1\right)}\right)}{\sqrt{\frac{1}{t}\left(ct-1\right)}}\ ,$

$$\frac{x\left(t\right)}{t^2\cdot\ln\left(x\left(t\right)\right)}=\frac{\exp\left(\sqrt{-\frac{2}{t}+2c}\right)}{t^2\ln\left(\exp\left(\sqrt{-\frac{2}{t}+2c}\right)\right)}=\frac{\exp\left(\sqrt{-\frac{2}{t}+2c}\right)}{t^2\sqrt{-\frac{2}{t}+2c}}=\mathrm{OK}$$

K.É.P.: $x\left(-1\right)=e \iff \sqrt{\dfrac{2}{1}+2c}=1 \iff c=\dfrac{-1}{2}\ .$