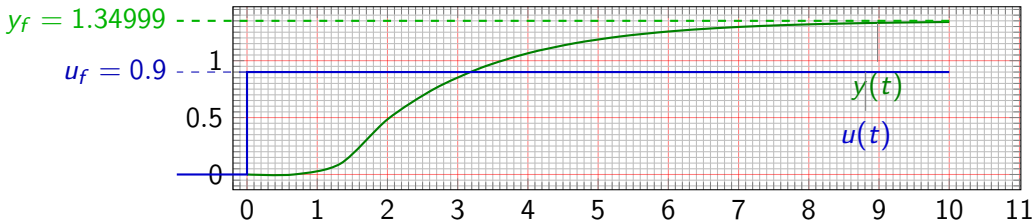
First-order model with delay - example

$$Y(s) = \frac{K\mathrm{e}^{-s\tau}}{sT+1}U(s) \quad \overset{U(s)=\frac{u_f}{s}}{\Longrightarrow} \quad y(t) = u_f K\left(1-\mathrm{e}^{-\frac{t-\tau}{T}}\right)u_s(t-\tau)$$



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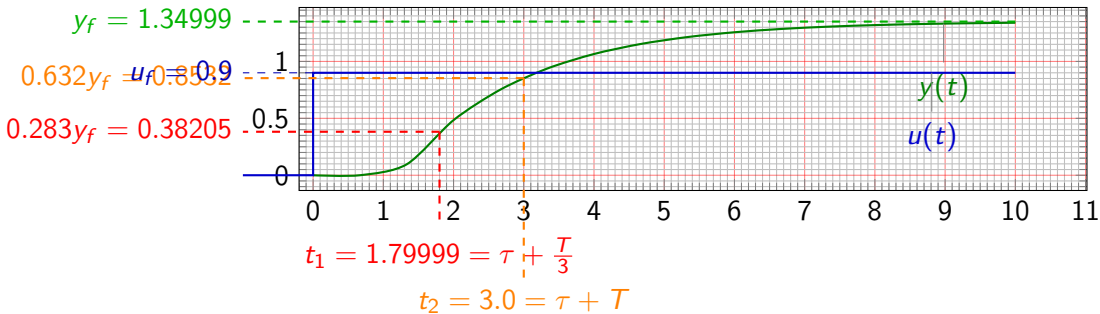

$$\begin{cases} 1.79999 = \tau + \frac{T}{3} \\ 3.0 = \tau + T \end{cases} \quad \Rightarrow \quad \begin{cases} \tau = 1.2 \\ T = 1.8 \end{cases}, \qquad K = \frac{y_f}{u_f} = \frac{1.34999}{0.9} = 1.5$$