SCALING OF DIFFERENTIAL EQUATIONS

DFHE

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Consider a decaying substance. Let $\hat{m} = \hat{m}[\hat{t}]$ represent [1] the mass of the substance at any time $\hat{t}$. If we hypothesise that the mass temporal change is proportional to the present amount of mass and add the condition that, at the beginning, mass equals the initial mass, then we have that

$$\begin{cases} -\dfrac{\mathrm{d}\hat{m}}{\mathrm{d}\hat{t}} = k\hat{m}\,, \\ \hat{m}[0] = \hat{m}_0\,. \end{cases} \tag{1}$$

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4.4.4. *Dimensional solution.*

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[1] Hats are used to represent *dimensional* quantities.

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