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syms R1 A w t tau iL(t)
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Vs = A * sin(w * t)
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Vs = $A \sin(t\,w)$

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ode = tau * diff(iL, t) + iL == Vs / R1
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ode(t) =

$$\tau \frac{\partial}{\partial t}\,\mathrm{iL}(t) + \mathrm{iL}(t) = \frac{A \sin(t\,w)}{R_1}$$

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DiL = diff(iL, t)
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DiL(t) =

$$\frac{\partial}{\partial t}\,\mathrm{iL}(t)$$

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dsolve(ode, DiL(0)==0)
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ans =

$$\frac{A\,\tau\,w\,\mathrm{e}^{-\frac{t}{\tau}}}{R_1\,\tau^2\,w^2 + R_1} - \frac{A\left(w\cos(t\,w) - \frac{\sin(t\,w)}{\tau}\right)}{R_1\,\tau\left(\frac{1}{\tau^2} + w^2\right)}$$