QUESTION

Find an integrating factor for the differential equation $\frac{dx}{dt} - \frac{x}{t} = t^2$. (Do NOT solve the equation).

ANSWER

The integrating factor is $\exp\left(\int -\frac{1}{t}\,dt\right) = \exp(-\ln t) = \exp\left(\ln t^{-1}\right) = \frac{1}{t}$