

Extreme Problem 8

By using the substitution $y = \frac{x}{t^3}$, obtain the general solution of the differential equation

$$t \frac{dy}{dt} - 3y(t-1) = (yt^2)^2, \text{ showing that it can be expressed in the form } y = \frac{3}{t^3(Ae^{-3t} - 1)},$$

Where A is an arbitrary, real valued constant.