TUE

Name	M#

Find the General Solution of the following ODEs

■ $t\,y' - 2\,y = t^3 e^{-t}$

$y' - \frac{2}{t}y = t^2 e^{-t}$

$t^{-2}y' - 2t^{-3}y = e^{-t}$

$(t^{-2}y)' = e^{-t}$

$t^{-2}y = -e^{-t} + C$

lin $y' + py = f$

not-sep,

$p(t) = -\frac{2}{t}$ $\int -\frac{2}{t}\,dt = -2\ln(t)$

$v(t) = e^{-2\ln(t)} = e^{\ln(t^{-2})} = t^{-2}$

$\boxed{y = -t^2 e^{-t} + Ct^2}$

1. $t\,y' - 4\,y = 3t^{-2}$

$y(t) =$

■ $(1 + 2\,t\,y^2)\,dt + (2\,y + 2\,t^2\,y + 3\,y^2)\,dy = 0$ aka $y' = -(1 + 2\,t\,y^2)/(2\,y + 2\,t^2\,y + 3\,y^2)$

2. $y' = -\frac{2\,t+y}{t+3\,y^2}$