

Some problems involving integrating factors

For each of the following, solve the given differential equation or initial value problem.

1. $(3ty + y^2) + (t^2 + ty)\frac{dy}{dt} = 0, \quad y(2) = 1$

2. $y \cos(ty) + (\sin(ty) + t \cos(ty))\frac{dy}{dt} = 0$