

Discussion 25: Linear Equations

1. Solve the differential equation:

a. $4x^3y + x^4y' = \sin^3 x$

b. $t^2 \frac{dy}{dt} + 3ty = \sqrt{1+t^2}, t > 0$

c. $xy' - 2y = x^2, x > 0$

2. Solve the initial-value problem

a. $t \frac{du}{dt} = t^2 + 3u, t > 0, u(2) = 4$

b. $xy' + y = x \ln x, y(1) = 0$