1. First order ODE: Find the most general solutions to:

(a) \((2xy^2 + 2y) + (2x^2y + 2x)y' = 0\)

(b) \(ty'(t) + 2y(t) = t^2 - t\)

(c) \(2x + y + xy'(x) = 0, \text{ let } v = \frac{y}{x}\).


3. Second order ODE:

(a) Arfken, Chapter 7, page 343, problem 7.3.4.

(b) Find the most general solution of \(y''(x) + 5y'(x) + 6y(x) = 0\) by finding a basis of the solution space (verify that the functions are linearly independent.)