

Math 135, Extra Problems

for Homework 3

1. Solve the following differential equations:

(a) $xy'' - xy' - y = 0, y(0) = 0$

(b) $xy'' - (x + 1)y' + 2y = 2, y(0) = 1$

(c) $xy'' - (x + 5)y' + 6y = 0, y(0) = 0$

(d) $xy'' + (x - 2)y' - 3y = -e^{-x}, y(0) = 1$

(e) $4xy'' + (2x + 2)y' - y, y(0) = 0$ (Hint: remember that the formula for $L[x^n]$ still holds when n is a non-negative real number.)