

Math 3331- HW5

1. Given one solution, find the second linearly independent solution

$$(i) \quad y'' - 4y' + 4y = 0, \quad y_1 = e^{2x}$$

$$(ii) \quad x^2 y'' + 2xy' - 6y = 0 \quad y_1 = x^2,$$

$$(iii) \quad (1 - x^2)y'' + 2xy' = 0 \quad y_1 = 1$$

$$(iv) \quad xy'' + y' = 0 \quad y_1 = \ln x$$

2. Solve the following

$$(i) \quad y'' - 3y' + 2y = 0,$$

$$(ii) \quad y'' - 4y' - 5y = 0 \quad y(1) = 0, y'(1) = 2,$$

$$(iii) \quad y'' + 8y' + 16y = 0,$$

$$(iv) \quad y'' - 2y' + y = 0 \quad y(0) = 5, y'(0) = 10,$$

$$(v) \quad 2y'' + 2y' + y = 0,$$

$$(iv) \quad y'' - 2y' + 5y = 0 \quad y(0) = 2, y'(0) = 4,$$

Due: Friday Mar. 16, 2018