Suggested problems: Sec 5.1 # 18, 20, 21, 23; Sec 5.2 # 2(a,b), 4(a,b), 7(a,b); Sec 5.4 # 8, 17, 20; Sec 5.5 # 1, 2, 3, 12
Sec 6.1 # 3, 4, 6, 9, 13, 15, 21, 25, 26, 27 Sec 6.2 # 1, 2, 3, 7, 13, 24, 29, 30, 32, 33
Small Quiz on Friday, November, 11, 2016

Mandatory problems:
(1) Consider the ODE
$$(1 - x)y'' + xy' - y = 0; \ x_0 = 0$$
    (a) [**10 pts**] Use power series to solve the ODE and find the recurrence relation (i.e. solve for the a's).
    (b) [**5 pts**] Find the first four terms of your two linearly independent solutions.

(2) [**5 pts each**] Solve the following ODEs
    (a) $x^2 y'' + 4xy' + 2y = 0$
    (b) $x^2 y'' - 3xy' + 4y = 0$
    (c) $x^2 y'' + 3xy' + 5y = 0$

(3) [**10 pts**] Find all singular points and determine whether each is regular or irregular for the following ODE
$$x^2(1 - x^2)y'' + \frac{2}{x}y' + 4y = 0$$

(4) [**20 pts**] Use Laplace transforms to solve the following IVP
$$y'' - 2y' + 2y = \cos t; \ y(0) = 1, \ y'(0) = 0.$$

Your homework raw score is: $\dfrac{n}{2m} \cdot M + \left(1 - \dfrac{n}{2m}\right) \cdot N = N + \dfrac{n}{2m}(M - N).$