HOMEWORK 7
MATH 353, FALL 2018
DUE TUESDAY, OCT. 30

Problems:
- Section 5.2: 15a, 21(ab). (For 21, you can replace the general $\lambda$ by $1/2$ in part (a) if you want. Also for (b), only consider $\lambda = 0, 2, 4$.)
- Section 5.3: 8 (note that $x_0 = 1$, not zero), 20.
- Section 5.4: 21, 36, 37.
- Section 5.5: 14. Note: for (c), look for a power series solution and find the recurrence. You don’t have to solve it.

Additional problems:
P1 (regular singular points). Consider the ODE

$$4x^2y'' + y = 0.$$ 

Even though $x = 0$ is not an ordinary point, we can still try to use the power series method. Look for a solution in the form of a power series,

$$y = \sum_{n=0}^{\infty} a_n x^n$$

and show that there are no solutions of this form. Hint: derive the equations for the $a_n$’s and show there are no solutions.