Math 217 - December 2, 2010

1. Find the first several (≈ 5) terms in the recurrance relation. Find the two linearly independent solutions.

$$c_2 = \frac{1}{2}c_0, \quad c_{n+2} = \frac{c_n + c_{n-1}}{(n+2)(n+1)}$$

Lecture Problems

2. Given the recurrance relation, find the solution to the DE

$$c_2 = \frac{1}{2}c_0, \quad c_{n+2} = c_n - 2c_{n-1}$$

3. Given the recurrance relation, find the solution to the DE

$$c_2 = c_3 = c_4 = c_5 = 0, \quad c_{n+2} = \frac{c_{n-4} + n^2 c_{n+1}}{(n+1)(n+2)}$$

4. Given the recurrance relation, find the solution to the DE

$$c_1 = \frac{1}{2}c_0, c_2 = 0, \quad c_{n+2} = \frac{2c_n - 3c_{n-1}}{n^2+1}$$

5. Given the recurrance relation, find the solution to the DE

$$c_0 = 1, c_2 = -3c_1, c_3 = 0, \quad c_{n+2} = \frac{2c_{n+1} - 3c_n + c_{n-1}}{n+1}$$

6. Find a series solution to the DE

$$y'' - e^x y = 0$$

7. Find a series solution to the DE

$$y'' + (\sin x)y = 0$$

8. Find a series solution to the DE

$$y'' - e^x y = \sin x$$

9. Find a series solution to the DE

$$y'' + (\cos x)y' - (\sin x)y = e^x$$