Lecture 21

Agenda:
1. Problems from HW 9

Problem 1(b)

Transform the following expression into a single power series

$$\sum_{n=0}^{\infty} (n+1) a_{n+2} x^{n+1} + \sum_{n=0}^{\infty} n a_n x^{n-1}$$

Transform the following expression into a single power series

$$x^2 \sum_{n=0}^{\infty} n(n-1) a_n (x-1)^{n-2}$$

Problems 2(b), 3(b) , and 4(b)

2(b): Find the Recursion Relations for a power series solution of

$$y'' - xy' - y = 0 \qquad (*)$$

about $x_0 = 1$.

3(b) Find the general solution of (*) near $x_0 = 1$

4(b) Find the unique solution to (*) satisfying

$$
\begin{aligned}
y(1) &= 1 \\
y'(1) &= 2
\end{aligned}
$$