113-1 ENGINEERING MATHEMATICS HW4

Part I: Rewrite the given expression as a single power series whose general term involves x^k.

1. $\sum_{n=1}^{\infty} 2nc_n x^{n-1} + \sum_{n=0}^{\infty} 6c_n x^{n+1}$

Part II: Find two power series solutions of the given differential equation about the ordinary point x=0.

(Please find and list the coefficients up to the x^7-term.)

2. $y'' - 3xy = 0$

Part III: Use the power series method to solve the given initial-value problem.

3. $(x-1)y'' - xy' + y = 0,\ y(0) = -2, y'(0) = 6$