Engineering Mathematics I---Quiz-8

Dec. 21, 2005

1) Find the radius of convergence and interval of convergence for the given power series.

$$\sum_{n=1}^{\infty} \frac{2^n}{n} x^n$$

2) Use the power series method to solve the given initial-value problem.

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

3) In this problem $x = 0$ is a regular singular point of the given differential equation. Show that the indicial roots of the singularity differ by an integer. Using the method of Frobenius to obtain at least one series solutions about $x = 0$. Form the general solution on $(0, \infty)$.

$$xy'' - xy' + y = 0$$