6. Using Power series solve the equation $9x(1-x)y''-12y'+4y=0$ near $x=0$

7. Prove that $\left(1-2xz+z^2\right)^{-\frac{1}{2}}=\sum_{n=0}^{\infty}z^nP_n(x), \quad |x|\le 1,\ |z|<1.$

8. Write short notes (Answer any **Three**)
   a) Integrating Factor
   b) Solution of Non homogeneous differential equation.
   c) Regular singular point of a differential equation.
   d) Rodrigue's formula to find Legendre polynomial.
   e) Prove that $xJ_n'=nJ_n-xJ_{n+1}$