

Ordinary Differential Equation

Quiz 2 (B2 & B3)

14th February 2023

1. Find radius of convergence of $\sum_{n \geq 0} \frac{p(p-1) \cdots (p-n+1)}{n!} x^n$
2. Solve: $y'' - xy = 0$. Express the solution in power series.
3. Let P and Q be analytic at $x \in [a, b]$. Show that every solution of $y'' + Py' + Qy = 0$ is analytic at x .
4. Let $y_1 = x^m \sum_{k \geq 0} a_k x^k$ and $y_2 = x^n \sum_{k \geq 0} b_k x^k$ be two F -series solution with $m < n$. Show that y_1, y_2 are linearly independent.