

Mathematics - 1

CHAPTER - Infinite Series

- Q1. Discuss the convergence: $\frac{1}{1 \cdot 3} + \frac{2}{3 \cdot 5} + \frac{3}{5 \cdot 7} + \dots \infty$
- Q2. Discuss the convergence: $\sum_{n=1}^{\infty} \frac{n+1}{n(2n-1)}$
- Q3. Discuss the convergence of the series: $\sum_{n=1}^{\infty} \frac{(n+1)}{n^2} x^n$.
- Q4. Discuss the convergence of the series: $\sum_{n=1}^{\infty} \frac{x^{n+1}}{(n+1)\sqrt{n}}$.
- Q5. Discuss the convergence: $x + \frac{2^2 x^2}{2!} + \frac{3^3 x^3}{3!} + \frac{4^4 x^4}{4!} + \dots \infty$
- Q6. Discuss the convergence: $\frac{1^2}{4^2} + \frac{1 \cdot 5^2}{4 \cdot 8^2} + \frac{1 \cdot 5 \cdot 9^2}{4 \cdot 8 \cdot 12^2} + \dots \infty$
- Q7. Discuss the convergence: $\frac{x}{1 \cdot 3} + \frac{x^2}{3 \cdot 5} + \frac{x^3}{5 \cdot 7} + \dots \infty$
- Q8. Test the convergence of the series $\sum_{n=1}^{\infty} \frac{n}{(n+1)^2}$ using Cauchy Integral test.
- Q9. Test the convergence of the series $\sum_{n=1}^{\infty} \frac{1}{(n+1)^2}$ using Cauchy Integral test.
- Q10. Examine the convergence of the series: $1 - \frac{1}{2\sqrt{2}} + \frac{1}{3\sqrt{3}} - \frac{1}{4\sqrt{4}} + \dots \infty$.
- Q11. Discuss the convergence of the series: $\sum_{n=1}^{\infty} \left(\frac{n+1}{3n}\right)^n$.
- Q12. Discuss the convergence: $\frac{1}{2} + \frac{2}{3}x + \left(\frac{3}{4}\right)^2 x^2 + \left(\frac{4}{5}\right)^3 x^3 + \dots \infty$.