

Week 6 Assignment

1. The series $\sum_{n=1}^{\infty} \frac{n^2}{3^n}$ is

- (A) Convergent
- (B) Divergent
- (C) Unbounded
- (D) None of these

2. The series $\sum_{n=1}^{\infty} \frac{x^n}{n}$, $x > 1$ is

- (A) Convergent
- (B) Divergent
- (C) Bounded
- (D) None of these

3. The series $\sum_{n=1}^{\infty} \left(n^{\frac{1}{n}} - 1 \right)^n$ is

- (A) Convergent
- (B) Divergent
- (C) Unbounded
- (D) None of these

4. A conditionally convergent series is a series which is

- (A) Absolutely convergent
- (B) Convergent but not absolutely convergent
- (C) Divergent
- (D) None of the above.

5. The series $\sum_{n=1}^{\infty} \left(\sin \frac{1}{n} + \frac{1}{n^2} \right)$

- (A) Convergent
- (B) Divergent
- (C) Bounded
- (D) None of these

6. The series $\sum_{n=1}^{\infty} \frac{1}{(2n-1)(2n+1)}$ is

- (A) Convergent
- (B) Divergent
- (C) Unbounded
- (D) None of these

7. The series $\sum_{n=1}^{\infty} 3^{-n + \frac{(-1)^n}{n}}$ is

- (A) Convergent
- (B) Divergent
- (C) Unbounded
- (D) None of these

8. The series $\sum_{n=1}^{\infty} \frac{1}{\sqrt{n} + \sqrt{n+1} + \sqrt{n+2} + \sqrt{n+3}}$ is

- (A) Convergent
- (B) Divergent
- (C) Bounded
- (D) None of these

9. For what value of x the series $\sum_{n=1}^{\infty} \frac{\left(1 + \frac{1}{n}\right)^{n^2}}{x^n}$ converges?

- (A) $x < e$
- (B) $x > e$
- (C) $x = e$
- (D) $x = 1$

10. If $\sum_{n=1}^{\infty} a_n$ converges, then $\lim_{n \rightarrow \infty} \frac{a_n + 1}{n^{\frac{1}{n}}}$ is

(A) 0

(B) 1

(C) -1

(D) does not exist.