

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

KAU



Exam IV

Hamed Al-Sulami

- أنقر على Start لبدء الاختبار.
- يحتوي هذا الأختبار على عشرون سؤالاً.
- عند الانتهاء من الاختبار أنقر على End للحصول على النتيجة.
- بالتوفيق إن شاء الله.



Enter Name:

I.D. Number:

Answer each of the following. Passing is 100%.

1. The sequence $\left\{ \frac{n}{n+1} \right\}_{n=1}^{\infty}$ is

Increasing

Not monotone

Not bounded

Decreasing

2. The series $\sum_{n=0}^{\infty} \frac{\ln n}{n^3}$ is

Diverges by Comparison
Test

Diverges by Integral
Test

Converges by
Comparison Test

Converges by Ratio Test

3. The series $\sum_{n=0}^{\infty} \frac{\sqrt{n}}{\ln n}$ is

Converges by
Comparison Test

Converges by Integral
Test

Converges by Ratio Test

Diverges by Comparison
Test

4. The series $\sum_{n=1}^{\infty} \frac{10}{n(n+1)}$ is

Divergent

Convergent to 0

Convergent to -10

Convergent to 10

5. The radius of convergence of the power series $\sum_{n=0}^{\infty} \frac{(-1)^n (x-3)^n}{n+1}$ is

$R = \infty$

$R = 4$

$R = 3$

$R = 1$

6. The sequence $\{-1, 0, 1, -1, 0, 1, -1, 0, 1, \dots\}$ is

Convergent to 0

Divergent

Convergent to 1

Convergent to -1

7. The sequence $\left\{ \left(\frac{1}{n} \right)^{1/\ln n} \right\}_{n=1}^{\infty}$ is

Divergent

Convergent to 1

Convergent to e

Convergent to -1

8. The series $\sum_{n=0}^{\infty} \frac{\sin n}{3^n}$ is

Diverges

Absolutely Convergent

Conditionally

Conditionally Divergent

Convergent

9. The series $\sum_{n=0}^{\infty} \frac{n2^n}{3^n}$ is

Diverges by Comparison
Test

Converges by Integral
Test

Diverges by Comparison
Test

Converges by Ratio Test

10. The series $\sum_{n=0}^{\infty} \frac{n2^n}{3^n}$ is

Diverges by Comparison
Test

Diverges by Root Test

Converges by Integral
Test

Converges by Root Test

11. The sequence $\left\{ \frac{n}{n+1} \right\}_{n=1}^{\infty}$ is

Not monotone

Not bounded

Divergent

Bounded

12. The interval of convergence of the power series $\sum_{n=0}^{\infty} \frac{(-1)^n (x-3)^n}{n+1}$ is

$[2, 4]$

$[2, 4)$

$(2, 4]$

$(2, 4)$

13. The series $\sum_{n=0}^{\infty} \frac{n+2}{3n-1}$ is

Converges by Integral
Test

Converges by
Comparison Test

Diverges by Divergence
Test

Diverges by Ratio Test

14. The Taylor series for $f(x) = \ln x$ at $a = 2$ is

$$\ln 2 + \sum_{n=0}^{\infty} \frac{(-1)^{n+1}(x-2)^{n+1}}{(n+1)2^{n+1}}$$

$$1 + \sum_{n=0}^{\infty} \frac{(-1)^{n+1}(x-2)^{n+1}}{(n+1)2^{n+1}}$$

$$1 + \sum_{n=1}^{\infty} \frac{(-1)^n(x-2)^{n+1}}{(n+1)2^{n+1}}$$

$$\ln 2 + \sum_{n=1}^{\infty} \frac{(-1)^n(x-2)^{n+1}}{(n+1)2^{n+1}}$$

15. The sequence $\left\{ \frac{(-1)^n n}{n+1} \right\}_{n=1}^{\infty}$ is

Convergent to -1

Convergent to 0

Convergent to 1

Divergent

16. The sum of the series $\sum_{n=0}^{\infty} \frac{\cos(n\pi)}{3^n}$ is

$$\frac{-1}{3}$$
$$\frac{-3}{4}$$

$$\frac{3}{4}$$
$$\frac{1}{3}$$

17. $\lim_{n \rightarrow \infty} \tanh n =$

$$1$$

$$\pi/2$$

DNE

$$0$$

18. The sum of the series $\sum_{n=1}^{\infty} \left(\frac{1}{\sqrt{n}} - \frac{1}{\sqrt{n+1}} \right)$ is

$$-1$$

$$\sqrt{2}$$

$$0$$

$$1$$

19. The series $\sum_{n=0}^{\infty} \frac{2^n + 3^n}{5^n + 2}$ is

Converges by Integral
Test

Converges by
Comparison Test

Diverges by Comparison
Test

Converges by Ratio Test

20. The power series for $f(x) = \sin^2 x$ is

$$\sum_{n=0}^{\infty} \frac{(-1)^{n+1} 2^{2n-1} x^{2n}}{(2n)!} \quad 1 + \sum_{n=1}^{\infty} \frac{(-1)^n 2^{2n-1} x^{2n+1}}{(2n+1)!}$$
$$1 + \sum_{n=0}^{\infty} \frac{(-1)^n 2^{2n-1} x^{2n+1}}{(2n+1)!} \quad \sum_{n=1}^{\infty} \frac{(-1)^{n+1} 2^{2n-1} x^{2n}}{(2n)!}$$

Answers:

Points:

Percent:

Letter Grade: