B1-CLAT3-18MAB101T-Calculus and Linear Algebra

pp0783@srmist.edu.in Switch account

Draft saved

Your email will be recorded when you submit this form

* Required

PART-A(30*1=30 marks)Answer all the questions

Choose the correct answer

*

If $u_n = \sqrt{\frac{n}{n+1}}.x^n$ then $u_{n+1} =$

A) $\sqrt{\frac{n}{n+1}}.x^{n+1}$ B) $\sqrt{\frac{n}{n+2}}.x^n$ C) $\sqrt{\frac{n+1}{n+2}}.x^{n+1}$ D) $\sqrt{\frac{n+1}{n+2}}.x^n$

- [ ] A
- [ ] B
- [x] C
- [ ] D

*

In De'Alembertz ratio test if $\lim_{n\to\infty} \frac{u_{n+1}}{u_n} = l$ then the series is---------- if $l < 1$.

A) absolutely convergent B) convergent C) divergent D) Conditionally convergent

- A
- B
- C
- D

*

The locus of the ultimate points of intersection of consecutive members of a family of curves is called the----------of the family of curves.

A) Evolute B) envelope C) locus D) curvature

- A
- B
- C
- D

*

The intrinsic formula for radius of curvature is

A) $\rho = \frac{d\psi}{ds}$ B) $\rho = \frac{ds}{d\psi}$ c) $\rho = c.\frac{d\psi}{ds}$ D) $\rho = r.\frac{ds}{d\psi}$

- A
- B
- C
- D

*

$\Gamma(n).\Gamma(1-n) =$

A) $\frac{\pi}{\cos(n\pi)}$ B) $\frac{\pi}{\sec(n\pi)}$ C) $\frac{\pi}{\sin(n\pi)}$ D) $\frac{\pi}{\operatorname{cosec}(n\pi)}$

- A
- B
- C
- D

*

Recurrence formula for Gamma function is

A)$\Gamma(n+1) = n\Gamma(n)$ B) $\Gamma(n-1) = n\Gamma(n)$ C) $\Gamma(n) = n\Gamma(n)$ D) $\Gamma(1-n) = n\Gamma(n)$

- (●) A
- ( ) B
- ( ) C
- ( ) D

*

The value of $\Gamma(\frac{1}{2})$ is

A)$\sqrt{\pi}$ B)$\sqrt{\frac{\pi}{2}}$ C) $\sqrt{\frac{\pi}{4}}$ D) $\sqrt{\frac{\pi}{3}}$

- (●) A
- ( ) B
- ( ) C
- ( ) D

*

Ratio test fails when $\lim_{n\to\infty} \frac{u_{n+1}}{u_n}$ is

A)< 1 B)> 1 C)equal to 1 D) equal to 0

- ○ A
- ○ B
- ◉ C
- ○ D

*

The curvature of a circle of radius a is

A) a B)∞ C)0 D)1/a

- ○ A
- ○ B
- ○ C
- ◉ D

*

$$\lim_{n\to\infty} \frac{n+1}{2n+7} =$$

A) 1 B)1/2 C)1/7 D)∞

- (○) A
- (●) B
- (○) C
- (○) D

*

An absolutely convergent series is also

A) convergent B) divergent C) conditionally convergent D) conditionally divergent

- (●) A
- (○) B
- (○) C
- (○) D

*

The evolute of a cycloid is

A) a circle B) a cycloid C) an ellipse D) a parabola

- ○ A
- ◉ B
- ○ C
- ○ D

*

The value of $\Gamma(8)$ is

A)3050 B)2500 C)2420 D)5040

- ○ A
- ○ B
- ○ C
- ◉ D

*

The series $\sum u_n$ is convergent while $\sum|u_n|$ is not convergent is called

A) absolutely convergent B) convergent C) divergent D) Conditionally convergent

- ○ A
- ○ B
- ○ C
- ◉ D

*

If $\lim_{n\to\infty} \frac{u_{n+1}}{u_n} = ex$ then ratio test fails if x is

A)$< \frac{1}{e}$ B) equal to e C)equal to $\frac{1}{e}$ D)$> \frac{1}{e}$

- ○ A
- ○ B
- ◉ C
- ○ D

*

The definite integral $\int_0^\infty e^{-x}x^{n-1}dx$ represents

A) $\beta(m+1,n)$ B) $\Gamma(n+1)$ C) $\Gamma(n)$ D) $\beta(m.n)$

- A
- B
- C
- D

*

The nth term of the series $1-\frac{1}{2^p}+\frac{1}{3^p}-\frac{1}{4^p}+\ldots$ For p> 0 is

A) $\frac{n}{n^p}$ B) $\frac{1}{(n+1)^p}$ C) $\frac{1}{n^p}$ D) $\frac{n}{(n+1)^p}$

- A
- B
- C
- D

*

$\frac{B(m,n+1)}{n} =$

A) $\frac{B(m,n+1)}{m+1}$ B) $\frac{B(m+1,n)}{n}$ C) $\frac{B(m,n+1)}{m}$ D) $\frac{B(m+1,n)}{m}$

- ○ A
- ○ B
- ○ C
- ◉ D

*

If κ is the curvature of the curve then the radius of curvature ρ is equal to

A) $\frac{\alpha}{\kappa}$ B) $\frac{1}{\kappa}$ C) $\frac{1}{r}$ D) $\alpha\kappa$

- ○ A
- ◉ B
- ○ C
- ○ D

*

The number of evolutes for a given curve is

A)1 B)2 C) 3 D)∞

- A
- B
- C
- (●) D

*

The radius of curvature at any point of a circle is equal to its

A) area B) diameter C) circumference D) radius

- A
- B
- C
- (●) D

*

The value of $\lim_{n\to\infty} \frac{1}{(1+\frac{1}{n})^n}$ is

A)$\frac{1}{e}$ B)e^2 C) e D)$\frac{1}{e^2}$

- A
- B
- C
- D

*

The series $1+\frac{x}{1!}+\frac{x^2}{2!}+\frac{x^3}{3!}+\ldots$ represents

A) log(1+x) b) log(1-x) C)e^x D) e^{-x}

- A
- B
- C
- D

*

$\sum \frac{1}{n}$ is ----------while $\sum \frac{1}{n^2}$ is convergent.

A) convergent B) divergent C) neither convergent nor divergent D) bounded

- A
- (●) B
- C
- D

*

The nth term of the series $\frac{3}{1^2 2^2} + \frac{5}{2^2 3^2} + \frac{7}{3^2 4^2} + \cdots to\ \infty\ is$

A) $\frac{2n+1}{(n+1)^2}$ B) $\frac{2n+1}{n(n+1)^2}$ C) $\frac{2n+1}{n^2(n+1)^2}$ D) $\frac{2n+3}{n^2(n+1)^2}$

- A
- B
- (●) C
- D

*

The Parametric formula for radius of curvature is

A) $\frac{(x'^2+y'^2)^{1/2}}{x'y''-y'x''}$ B) $\frac{(x'^2+y'^2)^{3/2}}{x'y''-y'x''}$ C) $\frac{(x'^2+y'^2)^{2/3}}{x'y''-y'x''}$ D) $\frac{(x'^2+y'^2)^{3/2}}{x'y''+y'x''}$

- [ ] A
- [x] B
- [ ] C
- [ ] D

*

The geometric series $1+x+x^2+x^3+\ldots+\infty$ is convergent for

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

- [ ] A
- [ ] B
- [x] C
- [ ] D

*

The radius of curvature at the point (0,3) on x+y=3 is

A)3 b) 0 C)∞ D)$\frac{1}{3}$

- A
- B
- C
- D

*

If $\sum u_n$ is convergent then $\lim_{n\to\infty} u_n$=

A) 0 B)1 C) n D) ∞

- A
- B
- C
- D

*

The parametric equations $x = a\sec\theta$, $y = b\tan\theta$ represent the curve

A) Ellipse B)Cycloid C)Hyperbola D)Parabola.

- [ ] A
- [ ] B
- [x] C
- [ ] D

Back Next Clear form