Section [Unit 1] 1 of 6 | Question : 1 of 5 | Marks for this Question : 1 | Negative Marks : -25% on wrong answer | 170% | General Instructions

Select the correct answer

Test time left: 01:28:13

If every minor of order 3 of a matrix A is zero, than rank of A is

- ○ greater than 3
- ○ equal to 3
- ○ less than or equal to 3
- ◉ less than 3

Finish | This is the **beginning** of the test! | Clear Response | Next »

Once you click next/finish, you will not be able to come back to this question later.

Select the correct answer

The eigen values of $\begin{bmatrix} 1 & 2 \\ 3 & 0 \end{bmatrix}$ are

- 2, 3
- -1, 2
- 3, -2
- 4, -3

Finish | Clear Response | Next »

Once you click next/finish, you will not be able to come back to this question later.

Section [Unit 1] 1 of 6 | Question : 3 of 5 | Marks for this Question : 1 | Negative Marks : -25% on wrong answer | 170% | General Instructions

Select the correct answer

Test time left: 01:25:12

The three vectors $V_1 = (2, -1, 2)$, $V_2 = (-2, 1, -2)$, $V_3 = (1, -2, -1)$ are

- (●) Linearly dependent
- ( ) Linearly independent
- ( ) both (a) and (b)
- ( ) none of these

Finish | Clear Response | Next »

Once you click next/finish, you will not be able to come back to this question later.

Section [Unit 1] 1 of 6 | Question : 4 of 5 | Marks for this Question : 1 | Negative Marks : -25% on wrong answer | 170% | General Instructions

Select the correct answer

Test time left: 01:23:14

The system of equations $x-3y+z=2;\ x-4y+z=0;\ 2y-z=1$ has

- ○ no solution
- ○ infinite many solution
- ◉ unique solution
- ○ none of these

Finish | Clear Response | Next »

Once you click next/finish, you will not be able to come back to this question later.

Select the correct answer

If two Eigen values of $\begin{bmatrix} 1 & 2 & 1 \\ 6 & -1 & 0 \\ -1 & -2 & -1 \end{bmatrix}$ are 3 and -4, then the third value is

- (●) 0
- ( ) 1
- ( ) -1
- ( ) 2

Section [Unit 2] 2 of 6 | Question : 1 of 5 | Marks for this Question : 1 | Negative Marks : -25% on wrong answer | 170% | General Instructions

Select the correct answer

Test time left: 01:20:54

If $y = \log(\sin(e^x))$ then value of $\frac{dy}{dx}$ is

- $e^x \tan e^x$
- $\frac{e^x}{\sin e^x}$
- $e^x \cot e^x$
- none of these

Finish | Clear Response | Next »

Once you click next/finish, you will not be able to come back to this question later

Select the correct answer

The value of $\frac{dy}{dx}$ for $x^3 + x^2y + y^2 = 29$ is

- $\frac{3x^2 + 2xy}{x^2 + 2y}$
- $-\frac{3x^2 + 2xy}{x^2 + 2y}$
- $\frac{3x^2 - 2x^2y}{x^2 + 2y}$
- $\frac{3x^2 + 2xy}{x^2 + 2y^2}$

Section [Unit 2] 2 of 6 | Question : 3 of 5 | Marks for this Question : 1 | Negative Marks : -25% on wrong answer | 170% | General Instructions

Select the correct answer

Test time left: 01:14:25

The value of integral $\int (x^2+1)e^x dx$ is

- $(x^2-x+3)+c$
- $(x^2+x+1)+c$
- $(x^2-2x+3)+c$
- none of these

Finish | Clear Response | Next »

Once you click next/finish, you will not be able to come back to this question later.

Section [Unit 2] 2 of 6 | Question : 4 of 5 | Marks for this Question : 1 | Negative Marks : -25% on wrong answer | 170% | General Instructions

Select the correct answer

Test time left: 01:12:43

The value of integral $\int \frac{1}{e^x - 1} dx$ is

- ○ $x - e^{-x} + c$
- ◉ $\log(1 - e^{-x}) + c$
- ○ $\log(e^x - 1) + c$
- ○ none of these

Finish | Clear Response | Next »

Once you click next/finish, you will not be able to come back to this question later.

Select the correct answer

The value of integral $\int_0^{\pi/2} \frac{\cos x}{\cos x + \sin x} dx$ is

- (●) $\frac{\pi}{4}$
- ( ) $\frac{\pi}{2}$
- ( ) π
- ( ) 0

Section [Unit 3] 3 of 6 | Question : 1 of 5 | Marks for this Question : 1 | Negative Marks : -25% on wrong answer | 170% | General Instructions

Select the correct answer

Test time left: 01:11:03

The value of $\lim_{x\to 0}\left(\frac{1}{x}-\frac{1}{\sin x}\right)$ is

- (●) 0
- ( ) 1
- ( ) $\frac{1}{2}$
- ( ) ∞

Finish | Clear Response | Next »

Once you click next/finish, you will not be able to come back to this question later.

Section [Unit 3] 3 of 6 | Question : 1 of 5 | Marks for this Question : 1 | Negative Marks : -25% on wrong answer | 170% | General Instructions

Select the correct answer

Test time left: 01:10:47

The value of $\lim_{x\to 0}\left(\frac{1}{x}-\frac{1}{\sin x}\right)$ is

- (●) 0
- ( ) 1
- ( ) $\frac{1}{2}$
- ( ) ∞

Finish | Clear Response | Next »

Once you click next/finish, you will not be able to come back to this question later.

Select the correct answer

The Taylor's series expansion of $\log(1+x)$ is

- $x+\frac{x^3}{3}+\frac{2}{15}x^5+---$
- $x-\frac{x^3}{3}+\frac{2}{15}x^5+---$
- $x-\frac{x^2}{2}+\frac{x^3}{3}-\frac{x^4}{4}+---$
- $-x-\frac{x^2}{2}-\frac{x^3}{3}-\frac{x^4}{4}+---$

Section [Unit 3] 3 of 6 | Question : 3 of 5 | Marks for this Question : 1 | Negative Marks : -25% on wrong answer | 170% | General Instructions

Select the correct answer

Test time left: 01:03:32

If the function $f(x) = x^4 - 62x^2 + ax + 9$ attains its maximum value at $x = 1$ in the interval $[0, 2]$ then the value of a is

- 0
- 100
- 120
- 128

Finish | Clear Response | Next »

Once you click next/finish, you will not be able to come back to this question later.

Section [Unit 3] 3 of 6 | Question : 4 of 5 | Marks for this Question : 1 | Negative Marks : -25% on wrong answer | 170% | General Instructions

Select the correct answer

Test time left: 58:01

Using Mean value theorem, the point c lying on the interval $[2, 6]$ if $f(x) = (x-3)(x-6)$ is

- ○ 2
- ◉ 4
- ○ 5
- ○ none of these

Finish | Clear Response | Next »

Once you click next/finish, you will not be able to come back to this question later.

Section [Unit 3] 3 of 6 | Question : 5 of 5 | Marks for this Question : 1 | Negative Marks : -25% on wrong answer | 170% | General Instructions

Select the correct answer

Test time left: 56:47

$$\lim_{x \to 1} \frac{\log x}{x-1} =$$

- (●) 0
- ( ) -1
- ( ) 1
- ( ) none of these

Finish | Clear Response | Next »

Once you click next/finish, you will not be able to come back to this question later.

Select the correct answer

$$\lim_{x \to 1} \frac{\log x}{x-1} =$$

- ○ 0
- ○ -1
- ○ 1
- ◉ none of these

Finish | Clear Response | Next »

Once you click next/finish, you will not be able to come back to this question later.

Select the correct answer

The value of $\lim_{(x,y)\to(0,0)} \frac{x-y}{\sqrt{x^2+y^2}}$ is

- ○ $\frac{1}{2}$
- ◉ does not exist
- ○ $\frac{1}{4}$
- ○ none of these.

Select the correct answer

If $u = \log (x^2 + y^2 + z^2)$, then the value of $x\,u_x + y\,u_y + z\,u_z$ is equal to

- ○ 0
- ○ $2\,e^u$
- ◉ 2u
- ○ 2

Once you click next/finish, you will not be able to come back to this question later.

Select the correct answer

Test time left: 45:28

If $x + y + z = \log z, then\ z_x$ is

- ○ $\frac{z}{1+z}$
- ◉ $\frac{1-z}{z}$
- ○ $\frac{z}{1-z}$
- ○ $\frac{1+z}{z}$

Finish | Clear Response | Next »

Once you click next/finish, you will not be able to come back to this question later.

Select the correct answer

If $z = \tan^{-1}\left(\frac{x^2 - y^2}{x^2 + y^2}\right)$ then $x\frac{\partial z}{\partial x} + y\frac{\partial z}{\partial y}$ is

- ○ $2z$
- ○ z
- ○ $3z$
- ◉ 0

Section [Unit 4] 4 of 6 | Question : 5 of 10 | Marks for this Question : 1 | Negative Marks : -25% on wrong answer | 170% | General Instructions

Select the correct answer

Test time left: 43:35

If $x = au, y = bv, z = cw$, then Jacobian of (x, y, z) w.r.t (u, v, w)

- $3abc$
- abc
- $a^2b^2c^2$
- $abcuvw$

Finish | Clear Response | Next »

Once you click next/finish, you will not be able to come back to this question later.

Select the correct answer

The maximum value of the function $f(x, y, z) = x^2 + y^2 + z^2$, where $lx+my+nz = p$ is

- (●) $\frac{l^2+m^2+n^2}{p^2}$
- ( ) $\frac{p^2}{l^2+m^2+n^2}$
- ( ) $\frac{3p^2}{l^2+m^2+n^2}$
- ( ) $\frac{l^2+m^2+n^2}{3p^2}$

Select the correct answer

The maximum value of the function $f(x, y, z) = x^2 + y^2 + z^2$, where $lx+my+nz = p$ is

- ○ $\frac{l^2+m^2+n^2}{p^2}$
- ◉ $\frac{p^2}{l^2+m^2+n^2}$
- ○ $\frac{3p^2}{l^2+m^2+n^2}$
- ○ $\frac{l^2+m^2+n^2}{3p^2}$

Select the correct answer

If $w = x^2 y^2$, $x = t^2$, $y = t^3$ then $\frac{dw}{dt}$ at $t = 1$ is

- ○ 9
- ◉ 10
- ○ 20
- ○ 0

Once you click next/finish, you will not be able to come back to this question later.

Select the correct answer

The stationary or critical point of function $f(x,y)=xy+\frac{9}{x}+\frac{3}{y}$ is

- ○ $(1,1)$
- ○ $(1,0)$
- ◉ $(3,1)$
- ○ $(1,3)$

Once you click next/finish, you will not be able to come back to this question later.

Select the correct answer

If $f(x,y)=\begin{cases}\dfrac{xy^2}{x^2+y^2} & , \ (x,y)\neq(0,0) \\ 0 & , \ (x,y)=(0,0)\end{cases}$ then value of $f_x(0,0)$ is

- ○ 1
- ○ 2
- ○ 0
- ◉ does not exist

Select the correct answer

If $f(x,y,z)=\left(x^2+y^2+z^2\right)^{-1/2}$ then $f_x(1,1,1)$ is

- ○ $\frac{1}{(3)^{3/2}}$
- ◉ $\frac{1}{(3)^{2/3}}$
- ○ $-\frac{1}{2(3)^{2/3}}$
- ○ $-\frac{1}{(3)^{3/2}}$

Select the correct answer

The area bounded by cylinder $x^2 + y^2 = 1, 0 \le z \le 4$ is

- $\int_0^4 \int_0^1 \int_0^{\sqrt{1-x^2}} dydxdz$
- $\int_0^4 \int_{-1}^1 \int_{-\sqrt{1-x^2}}^{\sqrt{1-x^2}} dydxdz$
- $\int_0^4 \int_0^{\sqrt{1-y^2}} \int_{-\sqrt{1-x^2}}^{\sqrt{1-x^2}} dydxdz$
- $\int_0^4 \int_0^1 \int_{\sqrt{1-x^2}}^{\sqrt{1-x^2}} dydxdz$

Section [Unit 5] 5 of 6 | Question : 2 of 10 | Marks for this Question : 1 | Negative Marks : -25% on wrong answer | 170% | General Instructions

Select the correct answer

Test time left: 19:13

Value of $\int_0^{\pi \sin\theta} \int_0 dr d\theta$ is

- 0
- 1
- 2
- -2

Finish | Clear Response | Next »

Once you click next/finish, you will not be able to come back to this question later.

Select the correct answer

The area bounded by the lines $x = 0, y = 0$ and $x + y = 1$ is given as

- (●) $\frac{1}{2}$
- ( ) $-\frac{1}{2}$
- ( ) $\frac{3}{2}$
- ( ) $-\frac{3}{2}$

Section [Unit 5] 5 of 6 | Question : 5 of 10 | Marks for this Question : 1 | Negative Marks : -25% on wrong answer | 170% | General Instructions

Select the correct answer

Test time left: 14:14

The area bounded by first quadrant of circle $x^2 + y^2 = 4$ is

- ○ $\frac{\pi}{2}$
- ◉ π
- ○ $\frac{\pi}{4}$
- ○ 4π

Finish | Clear Response | Next »

Once you click next/finish, you will not be able to come back to this question later.

Select the correct answer

After changing the order of integration in $\int_0^2 \int_{y=0}^{\frac{x^2}{2}} f(x,y)\,dy\,dx =$

- $\int_{y=-2}^{2} \int_{x=\sqrt{2y}}^{0} f(x,y)\,dx\,dy$
- $\int_{y=0}^{2} \int_{x=-\sqrt{2y}}^{\sqrt{2y}} f(x,y)\,dx\,dy$
- $\int_{y=0}^{2} \int_{x=\sqrt{2y}}^{2} f(x,y)\,dx\,dy$
- none of these

Select the correct answer

Volume of one octant of sphere $x^2 + y^2 + z^2 = 1$ is given as

- $\int_0^{\pi}\int_0^{1}\int_0^{r} r^2 \sin\theta \, d\theta \, dr \, d\varphi$
- $\int_0^{1}\int_0^{\pi/2}\int_0^{\pi/2} r^2 \sin\theta \, dr \, d\theta \, d\varphi$
- $\int_0^{1}\int_0^{\pi/4}\int_0^{\pi/2} r^2 \sin\varphi \, dr \, d\theta \, d\varphi$
- none of these

Select the correct answer

The value of $\int_0^1 \int_0^x \int_0^{x+y} dz\, dy\, dx$ is

- ○ $\frac{1}{8}$
- ○ $\frac{1}{3}$
- ◉ $\frac{1}{2}$
- ○ $\frac{1}{6}$

Polar form of the integral $\int_{-1}^{1}\int_{0}^{\sqrt{1-x^2}}(x^2+y^2)dy\,dx$ is

- $\int_{0}^{1}\int_{0}^{r} r^3 d\theta\, dr$
- $\int_{0}^{2\pi}\int_{0}^{1} r^2 dr\, d\theta$
- $\int_{0}^{\pi}\int_{0}^{1} r^3 dr\, d\theta$
- $\int_{0}^{\pi}\int_{0}^{1} r^2 dr\, d\theta$

Select the correct answer

If V is the volume bounded by $x^2 + y^2 + z^2 \le x$, then limit of r is

- $0 \le r \le \sin\theta$
- $0 \le r \le \cos\theta$
- $0 \le r \le \sin\theta \sin\phi$
- $0 \le r \le \sin\theta \cos\phi$

Finish | Clear Response | Next »

Once you click next/finish, you will not be able to come back to this question later.

Select the correct answer

In the Fourier series expansion of $f(x)=\begin{cases}1 & ,-\pi<x<0\\ 0 & ,\ 0\le x\le \pi\end{cases}$, the value of Fourier coefficient a_2 is

- ○ $\frac{2}{\pi}$
- ◉ 0
- ○ $-\frac{2}{\pi}$
- ○ none of these

Select the correct answer

In the Fourier series expansion of $f(x)=\begin{cases} x & ,0<x<\pi \\ 0 & ,\pi \le x \le 2\pi \end{cases}$, the value of Fourier coefficient a_1 is

- ○ $\frac{2}{\pi}$
- ◉ 0
- ○ $-\frac{2}{\pi}$
- ○ none of these

Section [Unit 6] 6 of 6 | Question : 4 of 10 | Marks for this Question : 1 | Negative Marks : -25% on wrong answer | 170% | General Instructions

Select the correct answer

Test time left: 02:30

The Fourier coefficient a_0 of the Fourier series for the function $f(x) = |x|$, $-\pi < x < \pi$ is

- 1
- $\frac{\pi}{4}$
- π
- 2π

Finish | Clear Response | Next »

Once you click next/finish, you will not be able to come back to this question later.

Section [Unit 6] 6 of 6 | Question : 5 of 10 | Marks for this Question : 1 | Negative Marks : -25% on wrong answer | 170% | General Instructions

Select the correct answer

Test time left: 01:29

In half range Sine series of $f(x)=1$, $0<x<2$, the value of Fourier coefficient b_2 is

- ○ 4
- ○ 2
- ◉ 0
- ○ $\frac{1}{2}$

Finish | Clear Response | Next »

Once you click next/finish, you will not be able to come back to this question later.

Select the correct answer

In the Fourier series expansion of $f(x)=\sqrt{\frac{1-\cos x}{2}}$, $0<x<2\pi$, the value of Fourier coefficient a_0 is

- ○ $\frac{1}{4}$
- ◉ $\frac{\pi}{4}$
- ○ 0
- ○ $\frac{4}{\pi}$

Section [Unit 6] 6 of 6 | Question : 8 of 10 | Marks for this Question : 1 | Negative Marks : -25% on wrong answer | 170% | General Instructions

Select the correct answer

Saved successfully. Test time left: 00:10

In the Fourier series expansion of $f(x) = 1 - \frac{x}{\pi}$, $-\pi < x < \pi$, the value of Fourier coefficient b_n is

- $\frac{2(-1)^n}{n\pi}$
- $\frac{(-1)^n}{n\pi}$
- $\frac{2}{n\pi}$
- none of these