Question No : 1 of 33

Marks: 1 (Time 1 Min)

Curl of a vector field is linked with

00:44

Answer

- Greatest rate of increase in function
- volume density of the outward flux of a vector field
- Rotational properties of field

Question No : 2 of 33

Marks: 1 (Time 1 Min)

A volume integral refers to an integral over a

00:55

Answer

- 1-dimensional domain
- 2-dimensional domain
- 3-dinemsional domain
- None of these

Question No : 3 of 33

Marks: 1 (Time 1 Min)

Volume integral in Spherical coordinates can be expressed as

01:04

Answer

$$\iint_R g(\rho,\varphi,z)\,d\rho d\varphi$$

$$\iiint_R g(\rho,\varphi,z)\,d\rho d\varphi dz$$



$$\iiint_R r\sin\varphi g(\rho,\varphi,z)\,d\rho d\varphi dz$$

Question No : 4 of 35

The divergence theorem converts

Answer

- Line to surface integral
- Surface to volume integral ✓
- Volume to line integral
- Surface to line integral ✗

01:16

Question No : 5 of 33

Marks: 1 (Time 1 Min)

The triple integral is used to compute volume.

Answer

3 / 17

- (•) True
- ( ) False

01:21

Question No : 6 of 33

Marks: 1 (Time 1 Min)

The Stoke's theorem uses which of the following operation?

01:30

Answer

4 / 17

- Divergence
- Gradient
- Curl
- Laplacian

Question No : 7 of 33

Marks: 1 (Time 1 Min)

The Stoke's theorem can be used to find which of the following?

Answer

01:41

- ea enclosed by a function in the given region ✓
- Volume enclosed by function in the given region ✗
- Linear distance
- Curl of the function

Question No : 7 of 33

Marks: 1 (Time 1 Min)

The Stoke's theorem can be used to find which of the following?

Answer

- Area enclosed by a function in the given region
- Volume enclosed by a function in the given region
- Linear distance
- Curl of the function

01:46

Question No : 8 of 33

Marks: 1 (Time 1 Min)

Applications of Green's theorem are meant to be in

01:51

Answer

5 / 17

- One dimensional
- Two dimensional
- Three dimensional
- Four dimensional

Question No : 9 of 33

The Green's theorem can be related to which of the following theorems mathematically?

Answer

- Gauss divergence theorem
- Stoke's theorem
- Euler's theorem
- Leibnitz's theorem

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Question No : 10 of 33

Marks: 1 (Time 1 Min)

Which of the following is not an application of Green's theorem?

02:10

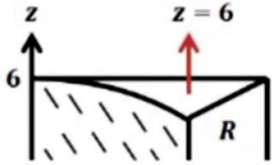
Answer

- Solving two dimensional flow integrals
- Area surveying
- Volume of plane figures
- Centroid of plane figures

Question No : 11 of 33

Marks: 1 (Time 1 Min)

The surface S and its projection R on the yz-plane are shown in figure.



Answer

- y=0 to y=4 and z=0 to z=2
- y=0 to y=4 and z=0 to z=6
- y=0 to y=2 and z=0 to z=4
- None of these

6 / 17

02:17

Question No : 12 of 33

Marks: 1 (Time 1 Min)

The Laplace operator is _____order differential operator given by the divergence of the gradient of a given function defined over a space R.

02:39

Answer

- first
- second
- third
- All of above

Type here to search

Question No : 13 of 33

Marks: 1 (Time 1 Min)

02:48

An integral where the function is evaluated along a _____ is called line integral.

Answer

- line
- curve
- scalar point

Question No : 14 of 33

Marks: 1 (Time 1 Min)

A vector is said to be solenoidal when its _____.

Answer

- divergence is zero
- divergence is unity
- curl is zero
- curl is unity

02:54

The Green's theorem in plane is a special case of _____ theorem.

Answer

- Divergence
- Gauss divergence
- stokes
- line integral

03:02

8 / 17

Question No : 16 of 33

Marks: 1 (Time 1 Min)

The generalization of Green's theorem as Gauss's divergence theorem is also called the _____ vector form of Green's theorem.

Answer

- (●) First
- ( ) Second
- ( ) Third
- ( ) Fourth

9 / 17

03:15

Question No : 17 of 33

$T = \frac{dr}{ds}$ is the ..... vector to the curve C

Answer

- (●) unit tangent
- ( ) unit normal
- ( ) position
- ( ) None of the given choices

03:28

9 / 17

Which of the following is perpendicular to the given surface $\varphi(x,y,z) = c$, where c is a constant?

Answer

- $\nabla(2\varphi)$
- $\nabla\varphi$ ✓
- Both $\nabla\varphi$ and $\nabla(2\varphi)$
- Neither $\nabla\varphi$ nor $\nabla(2\varphi)$ ✗

Question No : 19 of 33

For a given vector $\vec{V}$, which of the following is a scalar quantity?

Answer

- $2\vec{V}$
- $\vec{V} \times \vec{V}$
- $\nabla \times \vec{V}$
- $\nabla \cdot \vec{V}$

10 / 17

03:56

The function $\varphi(x,y,z) = x + y + z^2$ is a

Answer

- Vector Function
- Scalar function
- Vector Field
- None of these

Type here to search

Question No : 21 of 33

Marks: 1 (Time 1 Min)

$\nabla \times (\varphi \vec{A}) = ?$

04:24

Answer

$\varphi(\nabla \times \vec{A}) + \vec{A} \times (\varphi \times \nabla)$

$\varphi(\nabla \times \vec{A}) + (\varphi \nabla) \times \vec{A}$



$(\varphi \times \vec{A})\nabla + \vec{A} \times (\varphi \nabla)$

Question No : 23 of 33

Let R be the projection of the surface S on the xy — plane, then $\iint_S \vec{A}.\hat{n}dS = ?$

04:41

Answer

- $\iint_R \vec{A}\hat{n}dxdy$
- $\iint_R \vec{A}\hat{n}\frac{dxdy}{|\hat{n}.\hat{k}|}$
- $\iint_R \vec{A}\hat{n}\frac{dxdy}{|\vec{A}.\hat{k}|}$
- None of these

Question No : 24 of 33

Marks: 1 (Time 1 Min)

If R is the region bounded by a closed surface S and $\vec{A}$ is a vector point function

with continuous first partial derivative then $\iint_s \vec{A}\,\hat{n}\,dS =$

Answer

$\iiint_R \nabla \cdot \hat{n}\,dS$

$\iiint_R \nabla \cdot \hat{n}\,dV$

12 / 17

$\iiint_R \nabla \cdot \vec{A}\,dS$

05:16

If R is the region bounded by a closed surface S and $\vec{A}$ is a vector point function

with continuous first partial derivative then $\iint_S \vec{A}\,\hat{n}\,dS =$

Answer

- $\iiint_R \nabla \cdot \hat{n}\,dS$
- $\iiint_R \nabla \cdot \hat{n}\,dV$
- $\iiint_R \nabla \cdot \vec{A}\,dS$ 05:24 ✗
- $\iiint_R \nabla \cdot \vec{A}\,dV$ ✓

12 / 17

According to Stokes' theorem if S is an open, two sided surface bounded by a simple closed curve C, and $\vec{A}$ has continuous first partial derivatives then $\oint_C \vec{A}\, d\vec{r} = ?$

05:47

Answer

- $\int_S \nabla \cdot \vec{A}\, dS$
- $\int_S \nabla \times \vec{A}\, dS$
- $\int (\nabla \times \vec{A}) \cdot \hat{n}\, dS$ ✓

According to stock's theorem, if $\int_C \vec{A} \cdot d\vec{r} = 0$, for every closed curve C is _____ $= 0$ identically.

06:14

Answer

- $\nabla \cdot \vec{A}$
- $\nabla \times \vec{A}$ 
- $\nabla \cdot \vec{dr}$

The normal vector to the surface $f(x, y, z) = 0$ is $\vec{N} =$ _____.

Answer

- $\nabla \times f(x, y, z)$
- $\nabla \cdot f(x, y, z)$
- $\nabla f(x, y, z)$

06:26

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Question No : 28 of 33

Marks: 3 (Time 6 Mi

Check if the following integral is dependent or independent of path $\int_{(0,0)}^{(2,1)} \left(3x^2 - 2xy^2\right)dx - 2x^2 y\,dy$

06:36

Answer

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Question No : 29 of 33

Marks: 3 (Time 6

Find the limits of integration for $\iiint_E \vec{F} dV$ where V is the region bounded by the surfaces $x=0,\ y=0,\ z=0$ and $x+y+z=4$

Answer

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15 / 17

Question No : 30 of 33

Marks: 3 (Time

Find the directional derivative of $\varphi = \cos(\frac{x}{y})$ in the direction of $\vec{u} = \hat{i} - 2\hat{j} + 2\hat{k}$.

07:05

Answer

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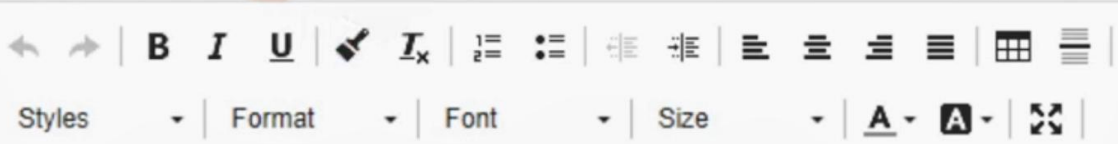
Find the area bounded by a simple closed curve C is given by

$$\frac{1}{2}\oint_C x\,dy - y\,dx$$

When $x = a\cos\theta,\ y = b\sin\theta$

Answer

07:20



Find a unit normal to the surface $x^2y - 3z = 2$ at the point $(1,1,1)$.

Answer

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