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## VU Answer

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Question No : 1 of 26 Marks: 1 (Budgeted Time 1 Min)

An ordered pair corresponds to ---------- on the plane

Answer ( Please select your correct option )

- A unique point
- A point in each quadrant
- Two points
- Infinite number of points

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Question No : 2 of 26 Marks: 1 (Budgeted Time 1 Min)

Plane is a special type of ----------.

Answer ( Please select your correct option )

- Curve
- Surface
- Sphere
- Cone

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Question No : 3 of 26 Marks: 1 (Budgeted Time 1 Min)

There is one-to-one correspondence between the set of points on a co-ordinate line and ----------

Answer ( Please select your correct option )

- Set of real numbers

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- Set of integers
- Set of natural numbers
- Set of rational numbers

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Question No : 4 of 26 Marks: 1 (Budgeted Time 1 Min)

What is the general equation of parabola whose axis of symmetry is parallel to y-axis?

Answer ( Please select your correct option )

- $y = ax^2 + b \quad (a \neq 0)$
- $x = ay^2 + b \quad (a \neq 0)$
- $y = ax^2 + bx + c \quad (a \neq 0)$
- $x = ay^2 + by + c \quad (a \neq 0)$

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Question No : 5 of 26 Marks: 1 (Budgeted Time 1 Min)

If the spherical coordinates of a point are $\left(2, \frac{\pi}{4}, 0\right)$, then z-coordinate in rectangular coordinate system is . . . . . .

Answer ( Please select your correct option )

- 0
- -2
- 2
- $\sqrt{2}$

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Question No : 6 of 26 Marks: 1 (Budgeted Time 1 Min)

The function $z = \frac{1}{\sqrt{x+y}}$ is discontinuous at origin because at the point (0,0), it . . . . . .

Answer ( Please select your correct option )

- has a jump
- has a hole
- approaches towards infinity
- approaches towards zero

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Question No : 7 of 26 Marks: 1 (Budgeted Time 1 Min)

The function $f(x, y) = \sqrt{y - x}$ is continuous in the region --------- and discontinuous elsewhere.

Answer ( Please select your correct option )

- $x \geq y$
- $x \neq y$
- $x \leq y$
- $x > y$

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Question No : 8 of 26 Marks: 1 (Budgeted Time 1 Min)

Let $w = f(x, y, z)$ and $x = g(r, s)$, $y = h(r, s)$, $z = t(r, s)$ then by chain rule $\frac{\partial w}{\partial r} = \ldots\ldots\ldots$

Answer ( Please select your correct option )

- $\frac{\partial w}{\partial x}\frac{\partial x}{\partial r} + \frac{\partial w}{\partial y}\frac{\partial y}{\partial r} + \frac{\partial w}{\partial z}\frac{\partial z}{\partial r}$
- $\frac{\partial w}{\partial r}\frac{\partial x}{\partial r} + \frac{\partial w}{\partial r}\frac{\partial y}{\partial r} + \frac{\partial w}{\partial r}\frac{\partial z}{\partial r}$
- $\frac{\partial w}{\partial x}\frac{\partial x}{\partial r}\frac{\partial x}{\partial s} + \frac{\partial w}{\partial y}\frac{\partial y}{\partial r}\frac{\partial y}{\partial s} + \frac{\partial w}{\partial z}\frac{\partial z}{\partial r}\frac{\partial z}{\partial s}$
- $\frac{\partial w}{\partial r}\frac{\partial r}{\partial x} + \frac{\partial w}{\partial r}\frac{\partial r}{\partial y} + \frac{\partial w}{\partial r}\frac{\partial r}{\partial z}$

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Question No : 9 of 26 Marks: 1 (Budgeted Time 1 Min)

Every differentiable function is always . . . . . .

Answer ( Please select your correct option )

- Piece wise continuous
- Discontinuous
- Continuous

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Question No : 10 of 26 Marks: 1 (Budgeted Time 1 Min)

The vector $\vec{a} \times \vec{b}$ is . . . . . to both $\vec{a}$ and $\vec{b}$.

Answer ( Please select your correct option )

- Opposite
- Equal
- Parallel
- Orthogonal

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Question No : 11 of 26 Marks: 1 (Budgeted Time 1 Min)

Gradient of a scalar function always results in a . . . . . function.

Answer ( Please select your correct option )

- Scalar
- Continuous
- Vector
- Constant

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Question No : 12 of 26 Marks: 1 (Budgeted Time 1 Min)

Tthe direction of gradient at any point on the surface is . . . . . to the tangent plane at that point.

Answer ( Please select your correct option )

- parallel
- perpendicular
- opposite direction
- None of these.

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Question No : 13 of 26 Marks: 1 (Budgeted Time 1 Min)

$f_x(p_o)(x-x_o)+f_y(p_o)(y-y_o)+f_z(p_o)(z-z_o)=0$ is the equation of . . . . . .

Answer ( Please select your correct option )

- Normal plane
- Point slope form of line
- Gradient of function $f(x,y,z)$
- Tangent plane

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Question No : 14 of 26 Marks: 1 (Budgeted Time 1 Min)

For a function $z = f(x, y)$, the total differential is defined as . . . . . .

Answer ( Please select your correct option )

- $dz = f_x(x,y)dx - f_y(x,y)dy$
- $dz = f_x(x,y)dx + f_y(x,y)dy$
- $dz = f_x(x,y)dy - f_y(x,y)dx$
- $dz = f_x(x,y)dy + f_y(x,y)dx$

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Question No : 15 of 26 Marks: 1 (Budgeted Time 1 Min)

For a function $f(x,y)$ to have both absolute maximum and minimum, it must be Continuous on . . . . . set R.

Answer ( Please select your correct option )

- a closed and bounded

correct

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- an open and bounded
- a closed and unbounded
- an open and unbounded

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Question No : 16 of 26 Marks: 1 (Budgeted Time 1 Min)

The volume of parallelepiped with dimensions $x, y, z$ is . . . . . .

Answer ( Please select your correct option )

- $V = x^2y^2z^2$
- $V = x + y + z$
- $V = \sqrt{xyz}$
- $V = xyz$

correct

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Question No : 17 of 26 Marks: 1 (Budgeted Time 1 Min)

Let $x$ be the length, width and height of a cube. The area of bottom will be . . . . . .

Answer ( Please select your correct option )

- $A = x^2$
- $A = x^3$
- $A = xz$
- $A = x + x^2$

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Question No : 18 of 26 Marks: 1 (Budgeted Time 1 Min)

A double integral and iterated integral become identical provided that the integrand is . . . . . over the given rectangular region.

Answer ( Please select your correct option )

- Bounded

correct

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- Discontinuous
- Continuous
- Defined

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Question No : 19 of 26 Marks: 1 (Budgeted Time 1 Min)

If $R = \{(x, y) : 2 \le x \le 4 \text{ and } 0 \le y \le 1\}$, then $\iint_R (4xe^{2y})dA = \ldots\ldots\ldots\ldots$

Answer ( Please select your correct option )

- $\int_0^1 \int_2^4 (4xe^{2y})dydx$
- $\int_0^1 \int_2^4 (4xe^{2y})dxdy$
- $\int_1^4 \int_0^2 (4xe^{2y})dxdy$
- $\int_1^4 \int_0^2 (4xe^{2y})dydx$

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Question No : 20 of 26 Marks: 1 (Budgeted Time 1 Min)

If $R = \{(x,y) : 0 \le x \le 2 \text{ and } 0 \le y \le 3\}$, then $\iint_R (1 - ye^{xy})dA = \ldots\ldots\ldots$

Answer ( Please select your correct option )

- $\int_0^2 \int_0^3 (1 - ye^{xy})dydx$
- $\int_0^2 \int_0^3 (1 - ye^{xy})dxdy$
- $\int_2^3 \int_0^0 (1 - ye^{xy})dxdy$
- $\int_0^2 \int_2^3 (4xe^{2y})dydx$

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Question No : 1 of 26 Marks: 1 (Budgeted Time 1 Min)

Which of the following is geometrical representation of set of real numbers?

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Answer ( Please select your correct option )

- Co-ordinate line
- xy-plane
- Sphere
- Circular cylinder

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Question No : 2 of 26 Marks: 1 (Budgeted Time 1 Min)

There is one-to-one correspondence between the set of points on a co-ordinate line and ----------

Answer ( Please select your correct option )

- Set of real numbers

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- Set of integers
- Set of natural numbers
- Set of rational numbers

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Question No : 3 of 26 Marks: 1 (Budgeted Time 1 Min)

An ordered triple corresponds to ---------- in a three dimensional space.

Answer ( Please select your correct option )

- A unique point
- A point in each octant
- Three points
- Infinite number of points

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Question No : 4 of 26 Marks: 1 (Budgeted Time 1 Min)

If the positive directions of x and y axes are known then ---------- the positive direction of z-axis.

Answer ( Please select your correct option )

- Horizontal rightward direction is
- Horizontal leftward direction is
- Left hand rule tells
- Right hand rule tells

correct not shoure

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Question No : 5 of 26 Marks: 1 (Budgeted Time 1 Min)

If a function is not defined at some point, then its limit ---------- exist at that point.

Answer ( Please select your correct option )

- Always
- Never
- May

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Question No : 6 of 26 Marks: 1 (Budgeted Time 1 Min)

A composition of continuous functions . . . . . .

Answer ( Please select your correct option )

- is always continuous

correct

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- may or may not be continuous
- is discontinuous
- is piece-wise continuous

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Question No : 7 of 26 Marks: 1 (Budgeted Time 1 Min)

According to the Euler's theorem, the order of partial differentiation can be changed, provided the function and all of its partial derivatives are. . . . . .

Answer ( Please select your correct option )

- Piece-wise continuous
- Continuous
- Discontinuous

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Question No : 8 of 26 Marks: 1 (Budgeted Time 1 Min)

If $x = f(r,s)$ and $r = g(t)$, $s = h(t)$, then derivative of $x$ with respect to $t$ is written as. . . . . .

Answer ( Please select your correct option )

- $\frac{\partial x}{\partial t}$
- $(x,t)$
- $\frac{\partial^2 x}{\partial t^2}$
- $\frac{dx}{dt}$

correct

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Question No : 9 of 26 Marks: 1 (Budgeted Time 1 Min)

A vector in a plane is always represented by a . . . . . .

Answer ( Please select your correct option )

- Line
- Curve
- Line segment
- None of these.

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Question No : 10 of 26 Marks: 1 (Budgeted Time 1 Min)

If two vectors $\vec{a}$ and $\vec{b}$ have the relation $\vec{a} = \lambda\vec{b}$ where $\lambda$ is a none-zero scalar then $\vec{a}$ and $\vec{b}$ are . . . . . to each other.

Answer ( Please select your correct option )

- Orthogonal
- Non-parallel
- Parallel
- None of these

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Question No : 11 of 26 Marks: 1 (Budgeted Time 1 Min)

The function decreases most rapidly in the direction of . . . . . .

Answer ( Please select your correct option )

- $-\nabla f$
- $-|\nabla f|$
- $\nabla f \times \hat{u}$
- $|\nabla f|$

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Question No : 12 of 26 Marks: 1 (Budgeted Time 1 Min)

Tthe direction of gradient at any point on the surface is . . . . . to the tangent plane at that point.

Answer ( Please select your correct option )

- parallel
- perpendicular
- opposite direction
- None of these.

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Question No : 13 of 26 Marks: 1 (Budgeted Time 1 Min)

$2x^2 + y^2 = 4$ is the . . . . . form of equation of a curve.

Answer ( Please select your correct option )

- Parametric
- Implicit
- Symmetric
- Explicit

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Question No : 14 of 26 Marks: 1 (Budgeted Time 1 Min)

If $f(x,y)$ has a relative extremum at a point $(x_0,y_0)$ and both the first partial derivatives of $f$ exist at this point, then . . . . . .

Answer ( Please select your correct option )

- $f_x(x_0,y_0)=0$ and $f_y(x_0,y_0)\neq 0$
- $f_x(x_0,y_0)\leq 0$ and $f_y(x_0,y_0)\leq 0$
- $f_x(x_0,y_0)\geq 0$ and $f_y(x_0,y_0)\geq 0$
- $f_x(x_0,y_0)=0$ and $f_y(x_0,y_0)=0$

correct

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Question No : 15 of 26 Marks: 1 (Budgeted Time 1 Min)

For a function $f(x)$, if $f'(x)$ is equal to some non-zero constant, then $f(x)$ will have . . . . . .

Answer ( Please select your correct option )

- At least one critical point

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- No critical point
- Non-zero critical points
- None of these

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Question No : 16 of 26 Marks: 1 (Budgeted Time 1 Min)

Let $x, y, z$ be the length, width and height of an open rectangular box. The surface area of the box will be . . . . . .

Answer ( Please select your correct option )

- $A = xy + 2yz + 2xz$

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- $A = yz + 4$
- $A = xz + yz + zx$
- $A = xyz$

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Question No : 17 of 26 Marks: 1 (Budgeted Time 1 Min)

Double integral of a function $f(x,y)$ represents . . . . . of the region between the surface defined by the function and the plane which contains its domain.

Answer ( Please select your correct option )

- Perimeter
- Volume
- Area
- Circumference

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Question No : 18 of 26 Marks: 1 (Budgeted Time 1 Min)

For the double integral $\int_c^d \int_a^b f(x,y)dxdy$, order of integration does not matter provided that $f(x,y)$ is . . . . . .

Answer ( Please select your correct option )

- Bounded
- Discontinuous
- Defined
- Continuous

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Question No : 19 of 26 Marks: 1 (Budgeted Time 1 Min)

If $R = \{(x,y) : 0 \le x \le 2 and -1 \le y \le 1\}$, then $\iint_R (x+2y^2)dA = \ldots\ldots\ldots\ldots\ldots$

Answer ( Please select your correct option )

- $\int_{-1}^{1}\int_{0}^{2} (x+2y^2)dydx$
- $\int_{0}^{2}\int_{1}^{-1} (x+2y^2)dxdy$
- $\int_{-1}^{1}\int_{0}^{2} (x+2y^2)dxdy$
- $\int_{1}^{2}\int_{-1}^{0} (x+2y^2)dxdy$

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Question No : 20 of 26 Marks: 1 (Budgeted Time 1 Min)

If $R = \{(x,y) : 0 \le x \le 4 \text{ and } 0 \le y \le 9\}$, then $\iint_R (3x - 4x\sqrt{xy})dA = \ldots\ldots\ldots\ldots$

Answer ( Please select your correct option )

- $\int_0^9 \int_0^4 (3x - 4x\sqrt{xy})dydx$
- $\int_0^4 \int_4^9 (3x - 4x\sqrt{xy})dxdy$
- $\int_4^9 \int_0^0 (3x - 4x\sqrt{xy})dxdy$
- $\int_0^4 \int_0^9 (3x - 4x\sqrt{xy})dydx$

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