MTH301 GRAND QUIZ

JUNAID MALIK

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Every point in three dimensional space can be described by ------- coordinates

- **Three**

What are the direction cosines for the line joining the points (1, 3, 2) and (7, -2, 3)?

- $\frac{6}{\sqrt{62}}, \frac{-5}{\sqrt{62}} and \frac{1}{\sqrt{62}}$

The angles which a line makes with positive x ,y and z-axis are known as ----------

Direction angles

- **Plane parallel to xz-plane**

Domain of the function f (x, y, z)= $\sqrt{x^2, y^2, z^2}$ **is**

- **Entire 3D-Space**

Suppose f (x, y) = xy− 2y where x2 = +3t 1 and y = 2t. Which one of the following is true?

- $\frac{df}{dt} = -16t - t$

For a function f (x, y, z) , the equation ∂∂22xf +∂∂22yf +∂∂22zf =0 is known as ---------- --

- **Laplace's Equation (Ali)**

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Magnitude of vector $\vec{a}$ is 2, magnitude of vectorb is 3 and angle between them when placed tail to tail is 45 degrees. What is $\vec{a}.\vec{b}$?

- **4.2**

Let R be a closed region in two dimensional space. What does the double integral over R calculates?

- **Radius of inscribed circle in R**

Two surfaces are said to be orthogonal at a point of their intersection if their normals at that point are ---------

- **Perpendicular**

Two surfaces are said to intersect orthogonally if their normals at every point common to them are ----------

- **In opposite direction**

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- **In opposite direction**

Let the function f x y(,) has continuous second-order partial derivatives) (fxx , fyy and fxy) in some circle centered at a critical point (x0, y0) and let D = fxx(x0, y0) fyy(x0, y0) − fxy2 (x0, y0) If D > 0 and fxx(x0, y0)

- **Relative maximum at**

Let the function f x y(,) has continuous second-order partial derivatives (fxx , fyy and fxy) in some circle centered at a critical point (x0, y0) and let D = fxx(x0, y0) fyy(x0, y0) − fxy2(x0, y0) If D = 0 then ----------

- **No conclusion can be drawn.**

Every real number corresponds to _____ on the co-ordinate line.

- **A unique point**

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

- **Set of real numbers**

Which of the following is associated to each point of three dimensional spaces?

- **A natural Number**

All axes are positive in _____octant.

- **First**

Let R be a closed region in two dimensional space. What does the double integral over R calculates?

- **Radius of inscribed circle in R**

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Two surfaces are said to be orthogonal at appoint of their intersection if their normals at that point are_____.

- **Perpendicular**

By Extreme Value Theorem, if a function f (x y,) is continuous on a closed and bounded set R, then f (x, y) has both _____ on R.

- **Absolute maximum and absolute minimum value**

Let the function f (x y,) has continuous second-order partial derivatives (fxx , fyy and f xy) in some circle centered at a critical point (x0, y0) and let D = fxx (x0, y0) fyy (x0, y0) − fxy 2 (x0, y0) if D > 0 and fxx (x0, y0) < 0 then f has _____ . Relative maximum at

- **Relative maximum at**

Let the function f (x y,) has continuous second-order partial derivatives ¬ ¬ ¬ ¬ (fxx , fyy and f xy) in some circle centered at a critical point (x0, y0) and let D = fxx (x0, y0) fyy (x0, y0) − fxy 2 (x0, y0) if

if D = 0 then _____.

- **No conclusion can be drawn.**

Every real number corresponds to ---------- on the co-ordinate line

- **Infinite number of points**

The is one –to – one correspondence between the set of the points on co-ordinate and --------

- **Set of natural number**

Which of the following is associated to each point of three dimensional spaces?

- **A natural number**

All axes are positive in-------octant

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- **First**

The spherical co-ordinates of a point are $\left(\sqrt{3}, \frac{\pi}{3}, \frac{\pi}{2}\right)$ **when are its cylindrical co-ordinates?**

- $\left(\sqrt{3}\sin\frac{\pi}{3}, \frac{\pi}{2}, \sqrt{3}\cos\frac{\pi}{3}\right)$

Suppose f(x,y)= xy -2y^2 Where x=3t +1 and y=2t which one of the following is true ?

- $\frac{df}{dt} = -4t + 2$

Let w= f(x ,y ,z) and x =g(r, s) , y=h(r ,s), z=t(r , s) then by chain rule

$$\frac{\partial w}{\partial r} =$$

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

Is the function f(x,y) continuous at origin ? if not ,why?

$$f(x,y) = \begin{cases} 0 & if\ x \geq 0\ and\ y \geq 0 \\ 1 & otherwise \end{cases}$$

- **F(x ,y) is not defined**

Is the function f(x,y) continuous at origin ? if not ,why?

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$$f(x,y)=\begin{cases}0 & if\ (x,y)\neq 0\\ 1 & if\ (x,y)=0\end{cases}$$

- **F(x, y) is not defined**

Let R be a closed region in two dimensional spaces. What does the double integral over R calculate?

- **Radius of inscribed circle in r**

Every real number corresponds to _____ on the co-ordinate line.

- **Infinite number of points**

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

- **Set of natural numbers**

Which of the following is associated to each point of three dimensional spaces?

- **A natural Number**

All axes are positive in _____octant

- **First**

By Extreme Value Theorem, if a function f (x y,) is continuous on a closed and bounded set R, then f (x y,) has both _____ on R.

- **Absolute maximum and absolute minimum value**

Let x be any point on co-ordinate line. What does the inequality -3 < x < 1 means?

- **The set of all real numbers between -3 and 1**

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Which of the following number is associated to each point on a co-ordinate line?

- **A real number**

Which of the following set is the union of set of all rational and irrational numbers?

- **Set of real numbers**

---------- planes intersect at right angle to form three dimensional space.

- **Three**

each point of domain, the function ----------

- **Is defined**

Suppose f(x ,y)=xe^{3xy} Which one of the following is correct?

- $\frac{\partial f}{\partial x} = 3x^2 e^{xy} + x^3 y e^{xy}$

Suppose f(x ,y)=xe^{3xy} Which one of the following is correct?

- $\frac{\partial f}{\partial y} = x^4 exy$

Suppose f (x, y) = 2xy where x = t 2 +1 and y = 3−t which one of the following is true?

- $\frac{\partial f}{\partial t} = -6t^2 + 12t - 2$

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I, j and k are unit vectors in the direction of x-axis, y-axis and z-axis respectively. Suppose that → a = 2i +5 j –k

- $\sqrt{30}$

Which of the following are direction ratios for the line joining the points (1, 3, 5) and (2, −1, 4)?

- **1, -4 and -1**

Which of the following is geometrical representation of the equation $y=x^2$, in three dimensional space?

- **Parabola**

Which of the following is the interval notation of real line?

- **$(-\infty , +\infty)$**

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

- **$y = ax^2 +bx +c\ (a \neq 0)$**

Which of the following is geometrical representation of the equation y=4, in three dimensional space?

- **A point on y-axis**

Plane is an example of ----------

- **Surface**

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

- **X ≤ y**

At critical points function can assume

- **Zero value**

A plane can be perfectly determined by

- **One point and normal vector**

Intersection of two straight lines is ----------

- **Point**

Plane is a ---------- surface.

- **Two-dimensional**

What are the parametric equations that correspond to the following vector equation?

$$\vec{r}(t)=\sin^2 t\,\hat{i}+(1-\cos 2t)\,\hat{j}$$

- **X=sin²t ,y=1-cos2t ,z=0**

What are the parametric equations that correspond to the following vector equation?

$$r(t)=(2t-1)\,\hat{i}-3\sqrt{t}\,\hat{j}+\sin 3t\,\hat{k}$$

- **X=2t-1, y= $-3\sqrt{t}$, Z=sin3t**

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What is the derivative of following vector-valued function?

$\vec{r}(t) = (\cos 5t, \tan t, 6\sin t)$

- $\vec{r}(t) = (-5\sin 5t, \sec^2 t, 6\cos t)$

The following differential is exact $dz = (x^2 y + y)dx - xdy$

- **False**

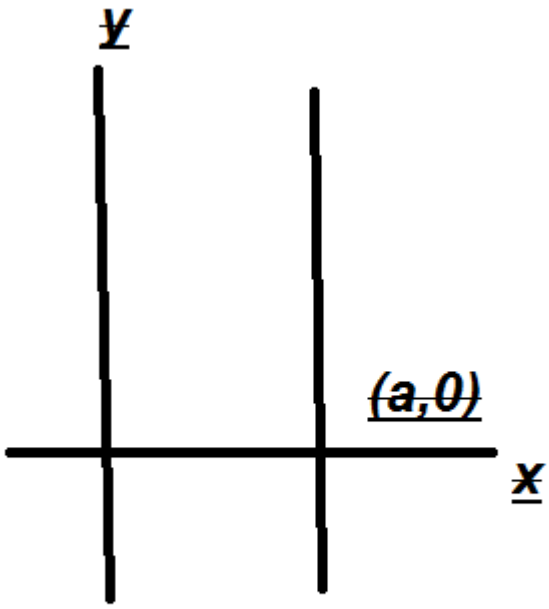
Which one of the following is correct Wallis Sine formula when n is even and n ≥ 2 ?

- $\int_0^{\frac{\pi}{2}} \sin^n x dx = \frac{\pi}{2}\frac{(n-1)}{n}\frac{(n-3)}{(n-2)}\frac{(n-5)}{(n-4)} - - - - - \frac{5}{6}\frac{3}{4}\frac{1}{2}$

Match the following equation in polar co-ordinates with its graph. r a where a is an arbitrary cons t

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If the equation of a curve, in polar co-ordinates, remains unchanged after replacing (r, θ) by (r, π−θ) then the curve is said to be symmetric about which of the following?

- **Y-axis**

If the equation of a curve, in polar co-ordinates, remains unchanged after replacing (r, θ) by (-r, θ) then the curve is said to be symmetric about which of the following?

- **Pole**

What is the amplitude of a periodic function defined by f(x)= $\sin 3x$

- **0**

What is the period of a periodic function defined by $f(x) = 4\cos 3x$ **?**

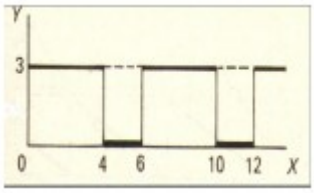
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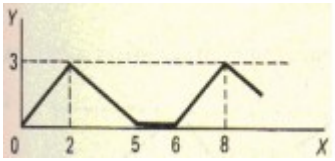
- $\frac{2\pi}{3}$

Match the following periodic function with its graph.

$$f(x)=\begin{cases}3 & 0<x<4\\ 0 & 4<x<6\end{cases}$$

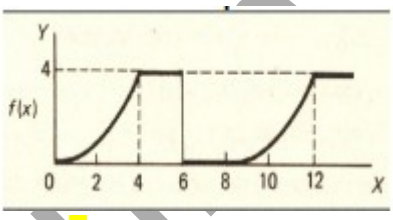
- 

What is the period of periodic function whose graph is as below?



6

What is the period of periodic function whose graph is as below?



- **8**

Let L denotes the Laplace Transform. If L { F(t)} = f (s) where s is a constant. And

$\lim_{x\to\infty}\left(\frac{f(t)}{t}\right)$ **Exists then which of the following equation holds?**

- $L\left(\frac{f(t)}{t}\right)=\int_{s}^{\infty}f(s)ds$

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Which of the following is Laplace inverse transform of the function f(s) defined by $f(s) = \frac{3}{s-2} - \frac{2}{s}$?

- $3e^{2t} - 2$

Let(x_1,y_1,z_1) and (x_2,y_2,z_2) be any two points in three dimensional space. What does the formula $\sqrt{(x_2 - x_1) + (y_2 - y_1) + (z_2 - z_1)}$ calculates?

- **Midpoint of the line joining these two points**

Let the functions P (x, y) and Q (x, y) are finite and continuous inside and at the boundary of a closed curve C in the xy-plane. If (P dx +Q dy) is an exact differential then $\int_c^{\infty} (P\,dx + Q\,dy) =$

- **Zero**

What is Laplace transform of the function F (t) if F (t) = t?

- $L\{t\} = \frac{1}{s}$

What is the value of $L\{e^{5x}\}$ if L denotes Laplace transform?

- $L\{e^{5x}\} = \frac{1}{s-5}$

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Evaluate the line integral $\int_c (3x+2y)dx+(2x-y)$ the line segment from (0, 0) to (0, 2).

- **2**

Evaluate the line integral $\int_c (2x+y)dx+(x^2-y)dy$ where C is the line segment from (0, 0) to (2, 0).

- **0**

Which of the following are direction ratios for the line joining the points (1, 3, 5) and (2, −1, 4)?

2, -3 and 20

$if\ R=\{(X,Y)/0\le X\le 2\ and\ 1\le y\le 4\},\ then\ \iint_R (6x^2+4xy^3)dx=$

- $\int_1^4\int_0^2 (6x^2+4xy^3)dxdy$

---------- Planes intersect at right angle to form three dimensional spaces.

- **Three**

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

- **Left hand rule tells**

What is the distance between points (3, 2, 4) and (6, 10, -1)?

- $\frac{7}{\sqrt{2}}$

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The equation ax +by+ cz + d = 0, where a, b, c, d are real numbers, is the general equation of which of the following?

- **Plane page**

Domain of the function $f(x,y) = \sqrt{y - x^2} is$

- $y \geq x^2$

What is the period of a periodic function defined by f(x)=sinx/2?

- **4π**

The graph of an odd function is symmetrical about ----------

- **Origin**

The path of integration of a line integral must be ----------

- **Continuous and single-valued**

Sign of line integral is reversed when ----------

- **Direction of path of integration is reversed.**

What is Laplace transform of the function f(t) if f(t) if f(t)=sin3t

- $l\{\sin 3t\} = \frac{3}{s^2 + 9}$

π is an example of ----------

- **Irrational numbers**

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Straight line is a special kind of ----------

- **Curve**

An ordered triple corresponds to ---------- in three dimensional spaces.

- **A unique point**

The angles which a line makes with positive x ,y and z-axis are known as ----------

- **Direction angles**

Is the function f (x, y) continuous at origin? If not, why? $f(x,y) = 4xy + \sin 3x^2 y$

- **F (x, y) is continuous at origin**

Two vectors are opposite vectors if they have _____.

- **both (a) and (c)**

If two dogs are pulling a bone with force=20 Newtons in opposite direction, the resultant force is _____

- **Zero Newton**

If the velocity (VI) of a car is 20m/s and velocity (V2) of bike is 40m/s, where both velocities are southward then which of the following would be the dot product of these velocities?

- **-800**

Limit of a function may exist at the point where it not defined

- **False**

Limit of a function may exist at the point where it not defined

- **False**

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A_____of continuous functions is continuous

- **All (a), (b) and (c)**

A quotient of continuous function is continuous, expect where the denominator is _____

- **Zero**

Intersection of two surfaces is a _____ in three dimensional space Curve

- **Face the parabola (y=ax^2 + bx + c) is opening downward when A<0**

Which coordinate system uses two distances and one angle?

- **Cylindrical**

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Which of the following is a two dimensional coordinate system

- **Polar coordinate system**

Limit of a function exist may exist at the point where it not defined

- **False**

The number square root of 2 is

- **None of these /1.41**

A plane z=3 is _____ to XY plane.

- **Parallel**

Value of the function f(x,y,z)=xyz at point (2,2,2) is

- **8**

The number 3/11 is

In rectangular coordinate system the point (-3,2) is in

- **Second quadrant**

Which of the following function is not the function of one variable?

- **m=g(s) + content**

XZ- Plane consists of all points

- **where X=0**

Value of the function f(x,y,z)=x^2+ y^2 + z^ 2 at the point (0,1,0) is

- **1**

If w=f(x,y,z) where x=g(t), z=h(T) then

- **Dw/dt=@wdz/@xdt + @wdy/@ydt + @wdz/@zdt**

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If f and its partial derivatives of the first, second and third orders are continuous on an open set, then at each point of the set_____

- **@²f/@y²@x = @²f/@y@x@y = @²f/@x@y²**

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All axis are negative in ---------- octant

- **Eight**

In three dimensional space, intersection of two surfaces is a ----------

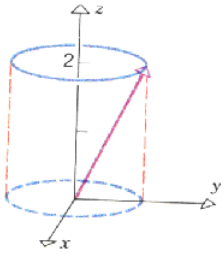
- **Plane**

For a function $f(x,y,z)$, the equation $\frac{\partial^2 f}{\partial^2 x}+\frac{\partial^2 f}{\partial^2 y}+\frac{\partial^2 f}{\partial^2 z}=0$ is known as ----------

- **Laplace's Equation**

Match the following vector-valued function with its graph.

$r(t)=\cos t\,\hat{i}+\sin t\,\hat{j}+2\hat{k}$ **and** $0\le t\le 2\pi$

- 

What is the derivative of following vector-valued function?

- $\vec{r}'(t)=\left(4t^3,\ \frac{1}{2\sqrt{t+1}},\ \frac{-6}{t^3}\right)$

What is the derivative of following vector-valued function?

$\vec{r}(t)=\left(e^{t^2},\ t^2,\ \sec 2t\right)$

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- $\vec{r}'(t) = \left(2te^{t^2},\ 2t,\ 2\sec 2t \tan 2t\right)$

The following differential is exact $dz = (x^2 + y^2)\,dx - 2xy\,dy$

- **False**

Which one of the following is correct Wallis Sine formula when n **is even and** $n \geq 2$ **?**

- $\int_0^{\frac{\pi}{2}} \sin^n x\,dx = \frac{\pi}{2}\frac{(n-1)}{n}\frac{(n-3)}{(n-2)}\frac{(n-5)}{(n-4)} \cdots \frac{5}{6}\frac{3}{4}\frac{1}{2}$

If $a > 0$**, then the equation, in polar co-ordinates, of the form** $r^2 = a^2 \cos 2\theta$ **represent which of the following family of curves?**

- **Leminscate**

Which of the following condition must be satisfied for a vector field $\vec{F}$ **to be a conservative vector field?**

- $\vec{F} = 0$

If $\lim_{(x,y,z)\to(x0,y0,z0)}$ **f(x,y,z) =L_1 then**

- $\lim_{(x,y,z)\to(x0,y0,z0)}$ **cf(x,y,z) = cL_1 If c is constant**

if $\lim_{(x,y)\to(x0,y0)}$ **F(x,y) = L_1** $\lim_{(x,y)\to(x0,y0)}$ **g (x,y)= L_2**

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- $\lim_{(x,y)\to(x_0,y_0)} f(x,y)/g(x,y) = L_1/L_2$; L_2 not equal to 0

The partial derivative with respect to x of $f(x,y) = 3x^2y+2y^2$ is _____

- $6xy + 2y^2$

Spherical coordinate @ is related to the cylindrical coordinate as_____

- @=@

How many real numbers exist between 1 and 5

- Infinity

Value of the function f(x,y,z)= square root $x^2+y^2+z^2$ at the point (0,3,0) is_____

- 3

The number pi is.

- Irrational

Length of magnitude of a unit vector is _____

- 1

The product of continuous

- functions is continuous True

F(x,y,z)= square root $x^2+y^2+z^2$

- [0, +infinity

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The product of continuous

- **function is continuous True**

Range of the function $y=3x^2-2$ is

- **All real numbers with $y \geq -2$**

if the partial derivative (w,r,t 'x' or 'y') at any point on the surface "z=f(x,y) is zero, than tangent plane at that point will be _____ to XY- plane

- **parallel**

Two vectors A and B are _____ if and only if their scalar

- **is equal to zero. Perpendicular**

The partial derivative with respect to x of $f(x,y)= 3x^2y + 2y^2$ is _____

- **6xy**

The chain rule can be taken as the derivative of the order function and multiplying it items the derivative of the _____

- **The inner function**

Two vectors are opposite vectors if they have_____

- **Both (A) and (c)**

Magnitude of the force vector F = -30 Newton, is _____

- **ewton**

Two vectors A and B are _____ if and only if their social product is equal to zero

- **Perpendicular**

Which of the following should be the scalar multiple (A) such that force ; F_1=20N and F_2 = -60N satisfy the

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- **A=-1/3**

A zero vector has magnitude equal to zero and _____

- **Direction Arbitrary**

The chain rule states that the derivative of f(g(x)) is _____

- **f(g(x))-g(x)**

The order of differentiation in an nth order partial derivative can be change without affecting the final result whenever the function and all its partial derivatives of order less than or equal to 'n' are_____

- **Continuous**

For which of the following values of 'y' the partial derivative of z=2/y(x-1) EXIST

- **R-{ 1,0}**

To find the limit of $f(x,y) = x^2+y/x^2$ at (0,0) if we approach (0,0) through the line x-axis, we get the value

- **1**

Value of money is an example of _____

- **Quantity Scalar**

IF y = sin t and $t= e^{xu}$ then which of the following is partial derivative of w.r.t.x

- **ut cost**

The function z=F(x,y) represents a _____ in

- **space Line**

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If two dogs are pulling with force=20Newtons in opposite direction, then the resultant force is_____

- **Zero Newton**

Limit of a function may exist at the point where it not

- **defined False**

A_____ of continuous function is continuous

- **All options**

The function e^{xy} is continous

In whole region of xy plane

A quotient of continuous function is continuous, expect where the denominator is _____

- **Zero**

if the partial derivative (w,r,t 'x' or 'y') at any point on the surface "z=f(x,y) is zero, than tangent plane at that point will be parallel to _____

- **XY plane**

Two determine the position of any object in a room we need how many coordinates.

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- **3(3 dimension)**

Which of the following is a two dimensional coordinate system

- **Cylindrical coordinate system**

Which of the following is the representation of spherical coordinates

- **(p,θ, φ)**

In cartesian coordinate system all axes are at _____degree to each other

- **90**

intersection of two surfaces is a ____ in three dimensional space

- **Curve**

The function f(x,y,z) = (x^2 +yz)/

- **(xy+z) Xy+z=0**

For which of the following values of 'y' the partial derivative of z=2/y(x-1)

- **R-{1,0}**

YZ- plane of all points where

- **X=0**

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Domain of the following function y= x/ 3x-4

- **All real number**

Cylindrical coordinate system is used to the position of any

- **object is Any dimension**

To express the location of any object on earth which coordinate system is used

- **Cylindrica coordinate system**

Face of the parabola (y-ax^2 + bx+ c) is opening downward

- **when A<0**

Cylindrical coordinate "y" is related to the Cartesian coordinate as

- **R= cos0**

Which coordinate system uses two distances and one angle?

- **Rectangular**

Which of the following function is not the function of one variable y=

- **f{x,y}**

Which of the following is a two dimensional coordinate system

- **Cylindrical coordinate system**

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The chain rule can be taken as the derivative of the outer function and multiplying it times the derivative of the _____

- **The inner function**

The rule is called the chain rule because we use it to take derivatives of ____ by changing together their derivative

- **Composite function**

The partial derivative at any point on the surface represents the slope of tangent _____ at that point

- **Line**

Partial derivative $f(x,y) = x^2+y^2+xy$ with respect to y is

- **None options**

Spherical coordinate 0 is related to the cylindrical coordinate as _____

- **@=@**

Which of the following is a two dimensional coordinate

- **system Polar coordinate system**

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Which coordinate system uses two distance and one angle?

- **Cylindrical**

A plane z=3 is _____ to XY-plane

- **Parallel**

Which of the following function is not the function of one variable

- **M=g(s)+ constant**

XZ-plane consists of all points where

- **x=0**

A zero vector has magnitude equal to zero and _____

- **direction No**

Which condition is necessary for a function to be continuous at any point (x,y)

- **All options**

If we = x + y while x=r + sandy = r-s then which of the following is partial derivative of w is w.r.tr?

- **1**

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If g and h are continuous functions of one varialble, then f(x,y) = g(x) h(y) is a _____ function of x and y.

- **Continuous**

The function of the form $f(x,y) = 3x^2x^5$ is _____ in the domain

- **continues everywhere**

If the velocity (v1) of a car is 20m/s eastward and velocity (v2) of bike is 40 m/s northward then which of the following would be the dot product of these velocities

- **-800**

Suppose that z=(x,y) is a function of two variable x and y, then partial derivative of function z with respect to x represents the _____ of the tangent of the curve

- **None OPTIONS**

The product of continuous functions is continuous

- **True**

The function e^{xy} is continuous In whole region of

- **xy plane**

The partial derivative of $f(x,y)=x^2y^{-2}$ with respect to x is _____

- **$x2_e$-y**

Let $f(x,y) = e^{2y}\cos x$ then $f_x(x,y)=$

- **e^{2y} sinx**

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If y=f(x) and x=g(t) then by chain rule dy/dt=

- **Dy/dx*dx/dt**

The partial derivative with respect to y of f(x,y) = x^2+2y^2+xy is _____

- **4y+x**

The mixed 2nd order partial derivatives of z=xy is equal to

xy

Scalar Triple Product of vectors A=[1,0,0], B=[0,1,0] and C=[0,0,1] is---------

- **1(not sure)**

he order of differentiation in an nth order partial derivative can be change without affecting the final result whenever the function and all its partial derivatives of order less than or equal to 'n' are ----------.

- **Differentiable (not sure)**

Let f(x,y)be a function with continuous second order partial derivatives in some circle centered at a critical point(x0,y0) and,

letD=fxx(x0,y0)fyy(x0,y0)−[fxy(x0,y0)]2IfD=0,then————————

- **f(x,y)has a saddle point at (x0,y0). (not sure)**

Geometrically the magnitude of Scalar Triple Product gives the----------.

- **Volume of Parallelepiped**

Value of money is an example of -------- quantity

- **Scalar**

Let f(x,y)be a function with continuous second order partial derivatives in some circle centered at a critical point(x0,y0) and,

LetD=fxx(x0,y0)fyy(x0,y0)−[fxy(x0,y0)]2. IfD>0andfxx(x0,y0)>0,then ——————

- f(x,y)has a saddle point at (x0,y0). (not sure)

Two vectors of magnitudes [4,5] making an angle of 30degree, then the area of parallelogram associated with these two vectors is ---------

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- Square units

For the function z=f(x, y, z),the total differentialdzis equal to

- dw = df = fx(x, y, z)dx +fy(x, y, z)dy +fz(x, y, z)dz

For the function z=f(x, y, z),the total differentialdzis equal to

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