)

Equation of tangent plane to $z = xy\sin(xy)$ at $\left(1, \frac{\pi}{2}\right)$ is ------.

$$z = \frac{\pi}{2}x - y + \frac{\pi}{2}$$

$$z = -\frac{\pi}{2}x + y + \frac{\pi}{2}$$

$$z = \frac{\pi}{2}x - y - \frac{\pi}{2}$$

$$z = \frac{\pi}{2}x + y - \frac{\pi}{2}$$

21)

In $\mathbb{R}^2$, if the function of one variable is differentiable at $x = \alpha$,
he curve $y = f(x)$ is approximated by $f(\alpha) + f'(\alpha)(x - \alpha)$ so that ------.

$$\lim_{x \to \alpha} \frac{f(x) - [f(\alpha) + f'(\alpha)(x - \alpha)]}{x - \alpha} = 0$$

$$\lim_{x \to \alpha} \frac{f(x) + [f(\alpha) - f'(\alpha)(x - \alpha)]}{x - \alpha} = 1$$

$$\lim_{x \to \alpha} \frac{f(x) - [f(\alpha) + f'(\alpha)(x - \alpha)]}{x - \alpha} = 1$$

$$\lim_{x \to \alpha} \frac{f(x) + [f(\alpha) - f'(\alpha)(x - \alpha)]}{x - \alpha} = 0$$

Click

)

Equation of tangent plane to $z = 2x + 3y - 1$ at $(1, -1)$ is ------.

$z = 2x - 3y + 1$

$z = 2x - 3y - 1$

$z = 2x + 3y - 1$

$z = -2x + 3y - 1$

02 August 2021)

In $\mathbb{R}^3$, if the function of two variable is differentiable at $(x, y) = (\alpha,\beta)$, then the curve $z = f(x, y$ is approximated by $f(\alpha, \beta) + f_x(\alpha, \beta)(x - \alpha) + f_y(\alpha, \beta)(y - \beta)$ such that;

$$\lim_{(x,y)\to(\alpha,\beta)} \frac{f(x, y) - [f(\alpha, \beta) + f_x(\alpha, \beta)(x - \alpha) + f_y(\alpha, \beta)(y - \beta)]}{\sqrt{f_x^2 + f_y^2}} = 0$$

$$\lim_{(x,y)\to(\alpha,\beta)} \frac{f(x, y) - [f(\alpha, \beta) + f_x(\alpha, \beta)(x - \alpha) + f_y(\alpha, \beta)(y - \beta)]}{\sqrt{f_x^2 + f_y^2}} = 1$$

$$\lim_{(x,y)\to(\alpha,\beta)} \frac{f(x, y) - [f(\alpha, \beta) + f_x(\alpha, \beta)(x - \alpha) + f_y(\alpha, \beta)(y - \beta)]}{\sqrt{(x - \alpha)^2 + (y - \beta)^2}} = 1$$

$$\lim_{(x,y)\to(\alpha,\beta)} \frac{f(x, y) - [f(\alpha, \beta) + f_x(\alpha, \beta)(x - \alpha) + f_y(\alpha, \beta)(y - \beta)]}{\sqrt{(x - \alpha)^2 + (y - \beta)^2}} = 0$$

Click to Save

21)

In $\mathbb{R}^n$, a function f is said to have the local minimum point at $X = A$, if the following inequlity holds $\forall X \in D_f \cap S_\varepsilon(A)$.

$f(A) > f(X)$

$f(A) \geqslant f(X)$

$f(X) > f(A)$

$f(X) \geqslant f(A)$ ✓

2021)

Equation of tangent plane to $z = xy\sin(xy)$ at $\left(1, \frac{\pi}{2}\right)$ is ------.

$z = \frac{\pi}{2}x + y - \frac{\pi}{2}$

$z = \frac{\pi}{2}x - y - \frac{\pi}{2}$

$z = -\frac{\pi}{2}x + y + \frac{\pi}{2}$

$z = \frac{\pi}{2}x - y + \frac{\pi}{2}$

August 2021)

In $\mathbb{R}^3$, the equation of tangent plane to the surface $z = x^2 + y^2 - 1$ at $(-1, 1)$ is ------.

$z = -2x + 2y + 3$

$z = 2x - 2y + 3$

$z = -2x + 2y - 3$ (✓)

$z = 2x + 2y - 3$

f 5 (Start time: 03:23:16 PM, 02 August 2021)

In $\mathbb{R}^n$, a function f is said to have the local minimum point at $X = A$, if the following inequlity holds $\forall X \in D_f \cap S_\epsilon(A)$.

rect option

$f(A) \geqslant f(X)$

$f(X) > f(A)$

$f(X) \geqslant f(A)$

$f(A) > f(X)$

Click to Save Answer & Move to N

quiz 3

Time Left

Quiz Start Time: 03:23 PM, 02 Aug

2 of 5 (Start time: 03:24:35 PM, 02 August 2021)

Total

In $\mathbb{R}^3$, if the function of two variable is differentiable at $(x,y)=(\alpha,\beta)$, then the curve $z=f(x,y)$ is approximated by $f(\alpha,\beta)+f_x(\alpha,\beta)(x-\alpha)+f_y(\alpha,\beta)(y-\beta)$ such that

the correct option

Reload Math

$$\lim_{(x,y)\to(\alpha,\beta)} \frac{f(x,y)-[f(\alpha,\beta)+f_x(\alpha,\beta)(x-\alpha)+f_y(\alpha,\beta)(y-\beta)]}{\sqrt{(x-\alpha)^2+(y-\beta)^2}}=0$$

$$\lim_{(x,y)\to(\alpha,\beta)} \frac{f(x,y)-[f(\alpha,\beta)+f_x(\alpha,\beta)(x-\alpha)+f_y(\alpha,\beta)(y-\beta)]}{\sqrt{f_x{}^2+f_y{}^2}}=1$$

$$\lim_{(x,y)\to(\alpha,\beta)} \frac{f(x,y)-[f(\alpha,\beta)+f_x(\alpha,\beta)(x-\alpha)+f_y(\alpha,\beta)(y-\beta)]}{\sqrt{(x-\alpha)^2+(y-\beta)^2}}=1$$

$$\lim_{(x,y)\to(\alpha,\beta)} \frac{f(x,y)-[f(\alpha,\beta)+f_x(\alpha,\beta)(x-\alpha)+f_y(\alpha,\beta)(y-\beta)]}{\sqrt{f_x{}^2+f_y{}^2}}=0$$

MC190401128: FAIZAN KHALID

MTH631:quiz 3

Question # 1 of 5 (Start time: 03:25:34 PM, 02 August 2021)

A tangent plane to the surface

$$z = f(x, y)$$

is always the limit of the -------------

Select the correct option

- None of these
- tangent line
- normal plane
- secant plane ✓

5 (Start time: 03:25:45 PM, 02 August 2021)

In $\mathbb{R}^2$, if the function of one variable is differentiable at $x = \alpha$, then the curve $y = f(x)$ is approximated by $f(\alpha) + f'(\alpha)(x - \alpha)$ so that ------- .

ect option

Reload

$$\lim_{x \to \alpha} \frac{f(x) + [f(\alpha) - f'(\alpha)(x - \alpha)]}{x - \alpha} = 1$$

$$\lim_{x \to \alpha} \frac{f(x) + [f(\alpha) - f'(\alpha)(x - \alpha)]}{x - \alpha} = 0$$

$$\lim_{x \to \alpha} \frac{f(x) - [f(\alpha) + f'(\alpha)(x - \alpha)]}{x - \alpha} = 1$$

$$\lim_{x \to \alpha} \frac{f(x) - [f(\alpha) + f'(\alpha)(x - \alpha)]}{x - \alpha} = 0$$

4G 3G 3:29 30

quiz.vu.edu.pk/QuizQue 2

MC190401128: FAIZAN KHALID

Time Left 85 sec(s)

MTH631:quiz 3

Quiz Start Time: 03:25 PM, 02 August 2021

Question # 5 of 5 (Start time: 03:28:59 PM, 02 August 2021)

Total Marks: 1

In $\mathbb{R}^n$, a function f is said to have the local maximum point at $X = A$, if the following inequlity holds $\forall X \in D_f \cap S_\varepsilon(A)$.

Select the correct option

Reload Math Equations

- $f(X) < f(A)$
- $f(A) \leqslant f(X)$
- $f(A) < f(X)$
- $f(X) \leqslant f(A)$

Click to Save Answer & Move to Next Question

August 2021)

In $\mathbb{R}^3$, a function $f(x, y)$ is differentiable at $A = (\alpha, \beta)$, if $f(X) = f(A) + f_x(A)(x - \alpha) + f_y(A)(x - \alpha) + E(X)(|X - A|)$ such that ---

$$\lim_{X \to A} E(X) = \infty$$

$$\lim_{X \to A} E(X) = f(A)$$

$$\lim_{X \to A} E(X) = 0$$

$$\lim_{X \to A} E(X) = 1$$

Question # 1 of 5 (Start time: 02:45:24 PM, 02 August 2021)

A critical point at which a function attains its maximum value among all points where it is defined is called ______

Select the correct option

- global minimum
- global maximum
- None of these
- infimum

Time: 02:10:23 PM, 02 August 2021)

Equation of tangent plane to $z = 2x + 3y - 1$ at $(1, -1)$ is ------.

on

Reload Math

$z = 2x + 3y - 1$

$z = -2x + 3y - 1$

$z = 2x - 3y - 1$

$z = 2x - 3y + 1$

Equation of tangent plane to $z = 2x + 3y - 1$ at $(1, -1)$ is - - - - - - .

$z = 2x + 3y - 1$

$z = 2x - 3y + 1$

$z = -2x + 3y - 1$

$z = 2x - 3y - 1$

MC200201764: MAZHAR IQBAL

Time Left 89 sec(s)

MTH631:quiz 3

Quiz Start Time: 11:54 AM, 02 August 2021

Question # 2 of 5 (Start time: 11:54:47 AM, 02 August 2021)

Total Marks: 1

In $\mathbb{R}^3$, a function $f(x,y) = (xy)^3$ has the critical point at $(0,0)$, and all f_{x_i} exist $\forall\, 1 \leqslant i \leqslant n$ in the neighborhood of $(0,0)$, then f $----$at $(0,0)$.

Select the correct option

Reload Math Equations

- maximum
- both maximum and minimum
- minimum
- neither maximum nor minimum

Click to Save Answer & Move to Next Question

MC200201764: MAZHAR IQBAL

Time Left 87 sec(s)

MTH631:quiz 3

Quiz Start Time: 11:54 AM, 02 August 2021

Question # 4 of 5 (Start time: 11:56:40 AM, 02 August 2021)

Total Marks: 1

In $\mathbb{R}^n$, a function f is said to have the local maximum point at $X = A$, if the following inequlity holds $\forall X \in D_f \cap S_\varepsilon(A)$.

Select the correct option

Reload Math Equations

- $f(X) \leqslant f(A)$
- $f(A) \leqslant f(X)$
- $f(X) < f(A)$
- $f(A) < f(X)$

Click to Save Answer & Move to Next Question

In $\mathbb{R}^n$, a function f has the local extreme point in the neighborhood of $X = A$, and all f_{x_i} exist $\forall\ 1 \leqslant i \leqslant n$, then - - - - - - .

$f(A) \neq 0$

$f_{x_i}(A) \neq 0\ \forall\ 1 \leqslant i \leqslant n$

$f(A) = 0$

$f_{x_i}(A) = 0\ \forall\ 1 \leqslant i \leqslant n$ ✓

A point on the graph of a function at which the tangent line is parallel to x-axis is called the ………….

Select the correct option

- point of inflection
- critical point
- None of these
- point of relative extrema

Click to Save Answer & Move to Next Question

4G 4G 87% 10:15

Quiz
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MC200203376: MAAZ

Time Left 87 sec(s)

MTH631:quiz 3

Quiz Start Time: 10:15 AM, 02 August 2021

Question # 1 of 5 (Start time: 10:15:35 AM, 02 August 2021)

Total Marks: 1

A point on the graph of a function at which the tangent line is parallel to x-axis is called the ....

Select the correct option

- point of relative extrema
- point of inflection
- critical point
- None of these

ZONG
Jazz

63% 11:16AM

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3

MC200203202: ABDUL RAUOF

Time Left 84 sec(s)

MTH631:quiz 3

Quiz Start Time: 11:14 AM, 02 August 2021

Question # 2 of 5 (Start time: 11:16:29 AM, 02 August 2021)

Total Marks: 1

In $\mathbb{R}^n$, a function f is said to have the local maximum point at $X = A$, if the following inequality holds $\forall X \in D_f \cap S_r(A)$.

Select the correct option

Reload Math Equations

- $f(X) < f(A)$
- $f(X) \leq f(A)$
- $f(A) < f(X)$
- $f(A) \leq f(X)$

Click to Save Answer & Move to Next Question

ZONG Jazz 62% 11:17AM

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:17:30 AM, 02 August 2021)

In $\mathbb{R}^n$, a function f is said to have the local minimum point at $X = A$, if the following inequlity holds $\forall X \in D_f \cap S_\varepsilon(A)$.

$f(A) > f(X)$

$f(A) \geqslant f(X)$

$f(X) > f(A)$

$f(X) \geqslant f(A)$

Click to Save Answer & Move to

ZONG Jazz 61% 11:20AM

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3

ABDUL RAUOF

Quiz Start Time: 11:14

Start time: 11:20:39 AM, 02 August 2021)

In $\mathbb{R}^n$, a function f is said to have the local extreme point at $X = A$, if there exists a $\varepsilon > 0$, such that $f(X) - f(A)$ does not change the sign in - - - - - - - .

option

the domian D_f of f

ε - neighborhood $S_\varepsilon(A)$ of point of $X = A$

$D_f \cup S_\varepsilon(A)$

$D_f \cap S_\varepsilon(A)$

Click to Save Answer & Move to N

MC200203376: MAAZ

Time Left 84 sec(s)

MTH631:quiz 3

Quiz Start Time: 10:15 AM, 02 August 2021

Question # 4 of 5 (Start time: 10:18:47 AM, 02 August 2021)

Total Marks: 1

In $\mathbb{R}^n$, a function f has the local extreme point in the neighborhood of $X = A$, and all f_{x_i} exist $\forall\ 1 \leqslant i \leqslant n$, then - - - - - - .

Select the correct option

Reload Math Equations

- $f_{x_i}(A) \neq 0\ \forall\ 1 \leqslant i \leqslant n$
- $f(A) \neq 0$
- $f_{x_i}(A) = 0\ \forall\ 1 \leqslant i \leqslant n$ ✓
- $f(A) = 0$

Click to Save Answer & Move to Next Question

2:01 52%

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MC200202696: FARRUKH AMAR

Time Left 89 sec(s)

MTH631:quiz 3

Quiz Start Time: 01:58 PM, 02 August 2021

Question # 3 of 5 (Start time: 02:00:54 PM, 02 August 2021)

Total Marks: 1

In $\mathbb{R}^n$, a function f is said to have the local minimum point at $X = A$, if the following inequlity holds $\forall X \in D_f \cap S_\varepsilon(A)$.

Select the correct option

Reload Math Equations

- $f(A) > f(X)$
- $f(A) \geqslant f(X)$
- $f(X) \geqslant f(A)$ ✓
- $f(X) > f(A)$

Click to Save Answer & Move to Next Question

2:04 52%

quiz.vu.edu.pk/QuizQue

MC200202696: FARRUKH AMAR

Time Left 88 sec(s)

MTH631:quiz 3

Quiz Start Time: 01:58 PM, 02 August 2021

Question # 5 of 5 (Start time: 02:04:46 PM, 02 August 2021)

Total Marks: 1

In $\mathbb{R}^3$, a function $f(x,y)$ is differentiable at $A=(\alpha,\beta)$, if $f(X)=f(A)+f_x(A)(x-\alpha)+f_y(A)(x-\alpha)+E(X)(|X-A|)$ such that - - - - - - - .

Select the correct option

Reload Math Equations

- $\lim_{X\to A} E(X)=f(A)$
- $\lim_{X\to A} E(X)=\infty$
- $\lim_{X\to A} E(X)=1$
- $\lim_{X\to A} E(X)=0$ ✓

Click to Save Answer & Move to Next Question

Question # 1 of 5 (Start time: 02:07:18 PM, 02 August 2021)

Total Marks

For a function of several variables $f(\mathbf{X})$, a point $\mathbf{X}_0$ is local extreme point if

Select the correct option

Reload Math Equations

◯	$f(\mathbf{X}) - f(\mathbf{X}_0)$ for all $\mathbf{X} \in D_f$
◯	partial derivatives exists and equal to zero
◯	If $f(\mathbf{X}) - f(\mathbf{X}_0)$ does not change sign in $S_\delta(\mathbf{X}_0) \cap D_f$ ✔
◯	None of these

(Start time: 02:09:30 PM, 02 August 2021)

Total

In $\mathbb{R}^3$, a function $f(x,y)$ is differentiable at $A=(\alpha,\beta)$, if
$f(X)=f(A)+f_x(A)(x-\alpha)+f_y(A)(x-\alpha)+E(X)(|X-A|)$ such that - - - - - - - .

lect the correct option

Reload Math Equ

- $\lim_{X\to A} E(X)=0$
- $\lim_{X\to A} E(X)=1$
- $\lim_{X\to A} E(X)=f(A)$
- $\lim_{X\to A} E(X)=\infty$

Question # 2 of 5 (Start time: 02:08:24 PM, 02 August 2021)

In $\mathbb{R}^n$, a function f has the critical point at $X = A$, and all f_{x_i} exist $\forall\ 1 \leqslant i \leqslant n$ in the neighborhood of $X = A$, then f ------ has the local extreme at A.

Select the correct option

- necessarily
- not necessarily ✓

2:02 52%

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MC200202696: FARRUKH AMAR

Time Left 86 sec(s)

MTH631:quiz 3

Quiz Start Time: 01:58 PM, 02 August 2021

Question # 4 of 5 (Start time: 02:02:43 PM, 02 August 2021)

Total Marks: 1

In $\mathbb{R}^3$, if the function of two variable is differentiable at $(x, y) = (\alpha, \beta)$, then the curve $z = f(x, y)$ is approximated by $f(\alpha, \beta) + f_x(\alpha, \beta)(x - \alpha) + f_y(\alpha, \beta)(y - \beta)$ such that;

Select the correct option

Reload Math Equations

- $$\lim_{(x,y)\to(\alpha,\beta)} \frac{f(x,y) - [f(\alpha,\beta) + f_x(\alpha,\beta)(x-\alpha) + f_y(\alpha,\beta)(y-\beta)]}{\sqrt{(x-\alpha)^2 + (y-\beta)^2}} = 1$$
- $$\lim_{(x,y)\to(\alpha,\beta)} \frac{f(x,y) - [f(\alpha,\beta) + f_x(\alpha,\beta)(x-\alpha) + f_y(\alpha,\beta)(y-\beta)]}{\sqrt{f_x^2 + f_y^2}} = 0$$
- $$\lim_{(x,y)\to(\alpha,\beta)} \frac{f(x,y) - [f(\alpha,\beta) + f_x(\alpha,\beta)(x-\alpha) + f_y(\alpha,\beta)(y-\beta)]}{\sqrt{(x-\alpha)^2 + (y-\beta)^2}} = 0$$
- $$\lim_{(x,y)\to(\alpha,\beta)} \frac{f(x,y) - [f(\alpha,\beta) + f_x(\alpha,\beta)(x-\alpha) + f_y(\alpha,\beta)(y-\beta)]}{\sqrt{f_x^2 + f_y^2}} = 1$$

Click to Save Answer & Move to Next Question

MC200202696: FARRUKH AMAR

Time Left 88 sec(s)

MTH631:quiz 3

Quiz Start Time: 01:58 PM, 02 August 2021

Question # 2 of 5 (Start time: 01:59:32 PM, 02 August 2021)

Total Marks: 1

In $\mathbb{R}^n$, a function f is said to have the local extreme point at $X = A$, if there exists a $\varepsilon > 0$, such that $f(X) - f(A)$ does not change the sign in - - - - - - - .

Select the correct option

Reload Math Equations

- $D_f \cup S_\varepsilon(A)$
- $D_f \cap S_\varepsilon(A)$
- the domian D_f of f
- ε - neighborhood $S_\varepsilon(A)$ of point of $X = A$

Click to Save Answer & Move to Next Question

Question # 5 of 5 (Start time: 10:24:54 AM, 02 August 2021)

A function may be .... at a point

$$X_0$$

even if its first partial derivatives are not continuous at

$$X_0$$

.

Select the correct option

- piecewise convergent
- uniformly convergent
- differentiable ✓
- None of these

2:41

Quiz
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Quiz Start Time: 02:38 PM

5 (Start time: 02:40:59 PM, 02 August 2021)

In $\mathbb{R}^3$, if the function of two variable is differentiable at $(x,y)=(\alpha,\beta)$, then the curve $z=f(x,y)$ is approximated by $f(\alpha,\beta)+f_x(\alpha,\beta)(x-\alpha)+f_y(\alpha,\beta)(y-\beta)$ such that;

ct option

Relo

$$\lim_{(x,y)\to(\alpha,\beta)} \frac{f(x,y)-[f(\alpha,\beta)+f_x(\alpha,\beta)(x-\alpha)+f_y(\alpha,\beta)(y-\beta)]}{\sqrt{f_x{}^2+f_y{}^2}}=1$$

$$\lim_{(x,y)\to(\alpha,\beta)} \frac{f(x,y)-[f(\alpha,\beta)+f_x(\alpha,\beta)(x-\alpha)+f_y(\alpha,\beta)(y-\beta)]}{\sqrt{f_x{}^2+f_y{}^2}}=0$$

$$\lim_{(x,y)\to(\alpha,\beta)} \frac{f(x,y)-[f(\alpha,\beta)+f_x(\alpha,\beta)(x-\alpha)+f_y(\alpha,\beta)(y-\beta)]}{\sqrt{(x-\alpha)^2+(y-\beta)^2}}=1$$

✓ $$\lim_{(x,y)\to(\alpha,\beta)} \frac{f(x,y)-[f(\alpha,\beta)+f_x(\alpha,\beta)(x-\alpha)+f_y(\alpha,\beta)(y-\beta)]}{\sqrt{(x-\alpha)^2+(y-\beta)^2}}=0$$

Click to Save Answer & Move to Ne

MC200200939: FASIH UR REHMAN

Time Left 84 sec(s)

MTH631:quiz 3

Quiz Start Time: 02:38 PM, 02 August 2021

Question # 5 of 5 (Start time: 02:41:55 PM, 02 August 2021)

Total Marks: 1

In $\mathbb{R}^n$, a function f has the critical point at $X = A$, and all f_{x_i} exist $\forall\ 1 \leq i \leq n$ in the neighborhood of $X = A$, then f ------ has the local extreme at A.

Select the correct option

Reload Math Equations

- necessarily
- not necessarily

[illegible]