

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

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


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

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

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



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

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


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

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

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

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

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

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

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

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



02 August 2021)

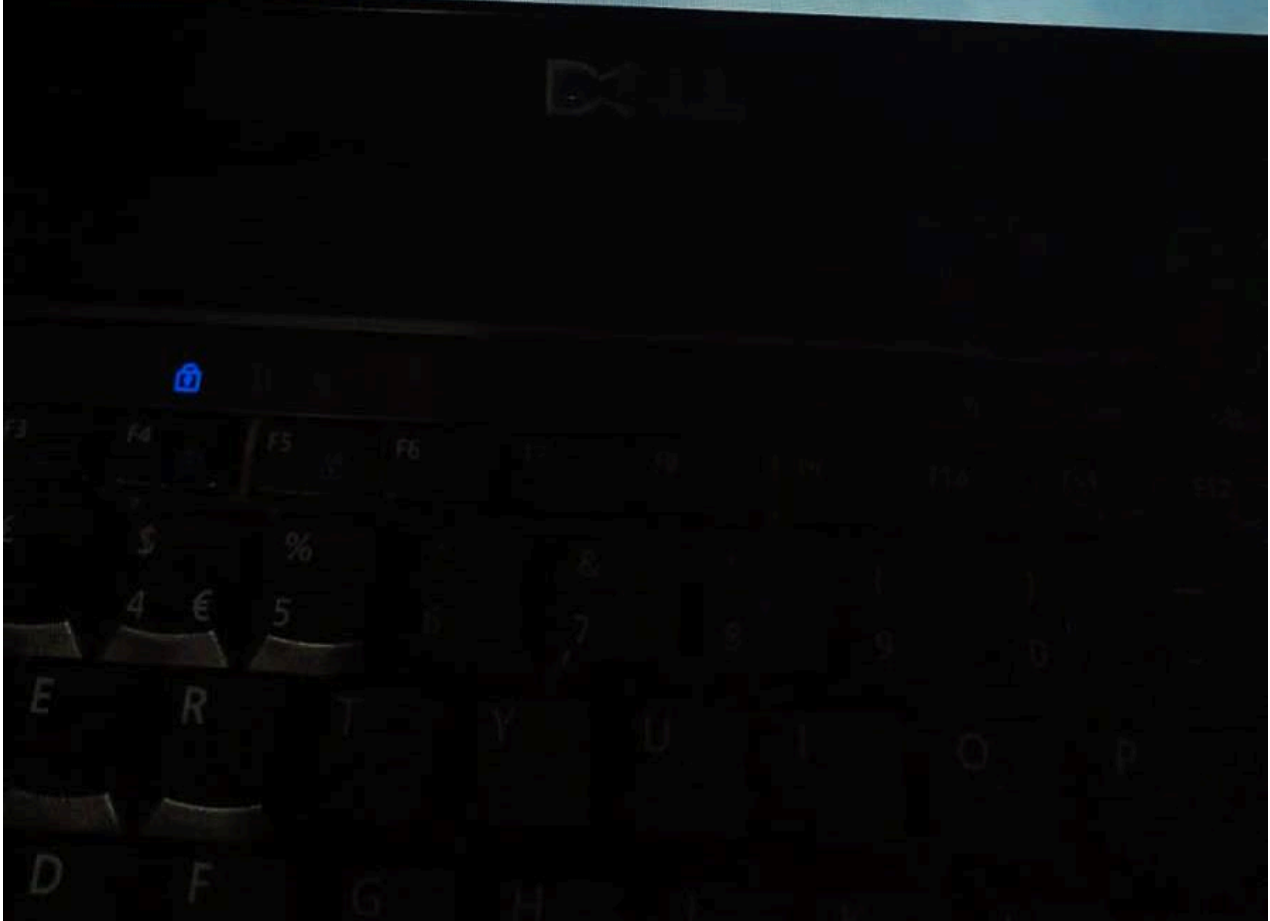
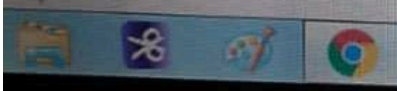
In \mathbb{R}^3 , if the function of two variable is differentiable at $(x, y) = (\alpha, \beta)$, then the curve $z = f(x, y)$ is approximated by $f(\alpha, \beta) + f_x(\alpha, \beta)(x - \alpha) + f_y(\alpha, \beta)(y - \beta)$ such that;

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

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

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

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



21)

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

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$$f(A) > f(X)$$

$$f(A) \geq f(X)$$

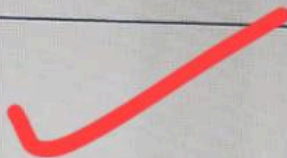
$$f(X) > f(A)$$

$$f(X) \geq f(A)$$



(2021)

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

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


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

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

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

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August 2021)

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

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

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

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



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

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15 (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 inequality holds $\forall X \in D_f \cap S_\epsilon(A)$.

Correct option .

$$f(A) \geq f(X)$$

$$f(X) > f(A)$$

$$f(X) \geq f(A)$$



$$f(A) > f(X)$$

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

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

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

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

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

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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

- | | |
|-----------------------|---------------|
| <input type="radio"/> | None of these |
| <input type="radio"/> | tangent line |
| <input type="radio"/> | normal plane |
| <input type="radio"/> | secant plane |

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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

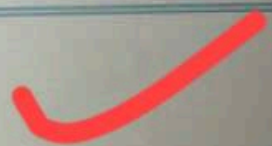
Reload

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

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

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

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



Click to Save Answer

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 inequality holds $\forall X \in D_f \cap S_\epsilon(A)$.

Select the correct option

Reload Math Equations

- | | |
|-----------------------|------------------|
| <input type="radio"/> | $f(X) < f(A)$ |
| <input type="radio"/> | $f(A) \leq f(X)$ |
| <input type="radio"/> | $f(A) < f(X)$ |
| <input type="radio"/> | $f(X) \leq f(A)$ |



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August 2021)

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

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

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

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

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



F4

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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



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

Reload Math

$z = 2x + 3y - 1$

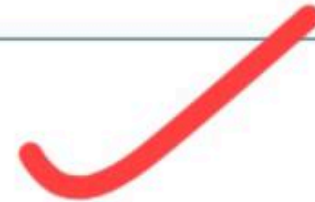
$z = -2x + 3y - 1$

$z = 2x - 3y - 1$

$z = 2x - 3y + 1$

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

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



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

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

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



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11:54 AM



Quiz



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 $\forall 1 \leq i \leq n$ in the neighborhood of $(0, 0)$, then f --- at $(0, 0)$.

Select the correct option

Reload Math Equations

- | | |
|-----------------------|-----------------------------|
| <input type="radio"/> | maximum |
| <input type="radio"/> | both maximum and minimum |
| <input type="radio"/> | minimum |
| <input type="radio"/> | neither maximum nor minimum |



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Click to Save Answer & Move to Next Question





Quiz



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 inequality holds $\forall X \in D_f \cap S_\epsilon(A)$.

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Preview Math Equations

Select the correct option

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

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 $\forall 1 \leq i \leq n$, then - - - - - .

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$$f(A) \neq 0$$

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

$$f(A) = 0$$

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



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



MC200203376: MAAZ

Time Left 87 sec(s)

MTH531-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

- | | |
|-----------------------|---------------------------|
| <input type="radio"/> | point of relative extrema |
| <input type="radio"/> | point of inflection |
| <input type="radio"/> | critical point |
| <input type="radio"/> | None of these |



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MC200203202: ABDUL RAUOF

Time Left 84
sec(s)

MTH031:quiz 3

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

Question # 2 of 5 (Start time: 11:16:25 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

Return Math Equations

- | | |
|-----------------------|------------------|
| <input type="radio"/> | $f(X) < f(A)$ |
| <input type="radio"/> | $f(X) \leq f(A)$ |
| <input type="radio"/> | $f(A) < f(X)$ |
| <input type="radio"/> | $f(A) \leq f(X)$ |

Click on Type answer & click on Post answer



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3



: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 inequality holds $\forall X \in D_f \cap S_c(A)$.

$$f(A) > f(X)$$

$$f(A) \geq f(X)$$

$$f(X) > f(A)$$

$$f(X) \geq f(A)$$



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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 $\epsilon > 0$, such that $f(X) - f(A)$ does not change the sign in -----.

option

the domain D_f of f

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

$D_f \cup S_\epsilon(A)$

$D_f \cap S_\epsilon(A)$



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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 $\forall 1 \leq i \leq n$, then -----.

Select the correct option

Reload Math Equations

- | | |
|----------------------------------|---|
| <input type="radio"/> | $f_{x_i}(A) \neq 0 \forall 1 \leq i \leq n$ |
| <input type="radio"/> | $f(A) \neq 0$ |
| <input checked="" type="radio"/> | $f_{x_i}(A) = 0 \forall 1 \leq i \leq n$ |
| <input type="radio"/> | $f(A) = 0$ |

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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 inequality holds $\forall X \in D_f \cap S_\epsilon(A)$.

Select the correct option

Reload Math Equations

- | | |
|----------------------------------|------------------|
| <input type="radio"/> | $f(A) > f(X)$ |
| <input type="radio"/> | $f(A) \geq f(X)$ |
| <input checked="" type="radio"/> | $f(X) \geq f(A)$ |
| <input type="radio"/> | $f(X) > f(A)$ |

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 # 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
 $f(X) = f(A) + f_x(A)(x - \alpha) + f_y(A)(y - \beta) + E(X)$ such that-----

Select the correct option

Reload Math Equations

- | | |
|----------------------------------|--|
| <input type="radio"/> | $\lim_{X \rightarrow A} E(X) = f(A)$ |
| <input type="radio"/> | $\lim_{X \rightarrow A} E(X) = \infty$ |
| <input type="radio"/> | $\lim_{X \rightarrow A} E(X) = 1$ |
| <input checked="" type="radio"/> | $\lim_{X \rightarrow A} E(X) = 0$ |

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

Total Marks

For a function of several variables

a point

is local extreme point if

$$f(\mathbf{X})$$


$$\mathbf{X}_0$$

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Select the correct option

Reload Math Equations

<input type="radio"/>	for all	$f(\mathbf{X}) - f(\mathbf{X}_0)$ $\mathbf{X} \in D_f$	
<input type="radio"/>	partial derivatives exists and equal to zero.		
<input checked="" type="radio"/>	if does not change sign in	$f(\mathbf{X}) - f(\mathbf{X}_0)$ $S_\delta(\mathbf{X}_0) \cap D_f$	
<input type="radio"/>	None of these		

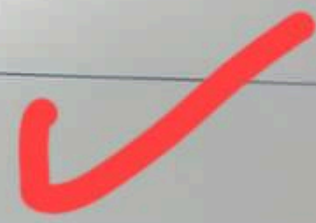
In \mathbb{R}^3 , a function $f(x, y)$ is differentiable at $A = (\alpha, \beta)$, if $f(X) = f(A) + f_x(A)(x - \alpha) + f_y(A)(y - \beta) + E(X)(\|X - A\|)$ such that -----.

Select the correct option

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



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

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

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

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 $\forall 1 \leq i \leq n$ in the neighborhood of $X = A$, then f ----- has the local extreme at A .

Select the correct option

<input type="radio"/>	necessarily
<input checked="" type="radio"/>	not necessarily



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

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

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

- | | |
|----------------------------------|---|
| <input type="radio"/> | $D_f \cup S_\varepsilon(A)$ |
| <input checked="" type="radio"/> | $D_f \cap S_\varepsilon(A)$ |
| <input type="radio"/> | the domain D_f of f |
| <input type="radio"/> | 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



Quiz

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Quiz Start Time: 02:38 PM

(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;

Correct option

Relo

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

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

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

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

Click to view Answer & Move to Next





MC200200939: FASIH UR REHMAN

Time Left 84 sec(s)

MTH031 quiz 3

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

Question 4 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

Reveal Math Equations

- necessarily
- not necessarily

