

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

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Answer ( Please select your correct option )

x-axis

y-axis

origin

None of these

Start Time: 9:41 AM

87:00

Time Left



Question Summary : ( Attempted Question  )

1

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### MTH633 Group Theory

Question No : 26 of 41

If  $H$  has 6 elements, then all cosets of  $H$  must have \_\_\_\_\_ elements.

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Answer ( Please select your correct option )

- 3
- 9
- 12
- 6

Start Time: 8:05 AM

**1:10:00**

Time Left



Question Summary : ( Attempted Question ■ )

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21

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MathType (Lite mode) - ...

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\_\_\_\_\_ is the only region in  $\mathbb{R}$ .

Answer ( Please select your correct option )

Set of finite points of  $\mathbb{R}$

Interval

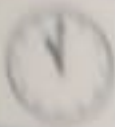
Any finite sequence of  $\mathbb{R}$

None of these

Start Time: 9:41 AM

84:00

Time Left



3

Question Summary : ( Attempted Question )

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
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The rate of change of  $f(x,y)$  in the direction of a unit vector is called the \_\_\_\_\_ of  $f(x,y)$ .

Answer ( Please select your correct option )

differential

directional derivative

mixed derivative

None of these

Start Time: 9:41 AM

74:00  
Time Left



10

Question Summary : ( Attempted Question )

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
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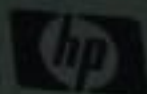
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A function of several variables may have first order partial derivatives at a point  $X_0$  but \_\_\_\_\_ continuous at  $X_0$ .

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Answer ( Please select your correct option )

fail to be

must be

always not

None of these

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**74:00**  
Time Left

11

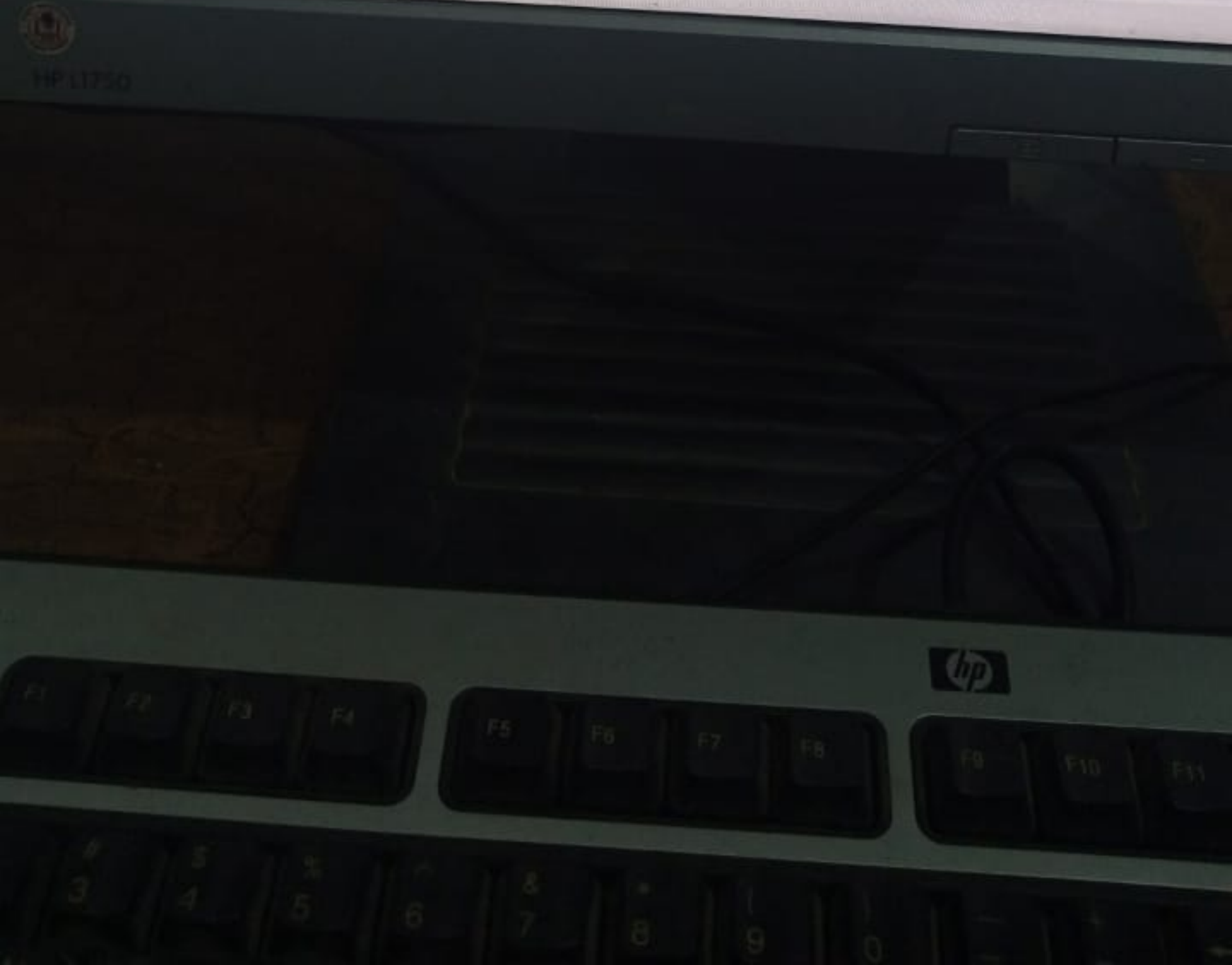
Question Summary : ( Attempted Question )

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
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A function of the form  $L(X) = f_x(X_0)x_1 + f_{x_2}(X_0)x_2 + \dots + f_{x_n}(X_0)x_n$  is called \_\_\_\_\_

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Answer ( Please select your correct option )


quadratic function

differential of  $f$  at  $X_0$  ✓

constant function

None of these

Start Time: 9:41 AM  
**74:00**  
Time Left 

12 


Question Summary : ( Attempted Question ■ )

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
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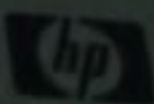
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HP L1750



If  $h = f(x, y)$ ,  $x = f(r, \theta)$  and  $y = f(r, \theta)$ , then using the chain rule,  $\frac{\partial h}{\partial \theta} = \dots\dots\dots$

Answer ( Please select your correct option )

$\frac{\partial f}{\partial r} \frac{\partial r}{\partial \theta} + \frac{\partial f}{\partial r} \frac{\partial r}{\partial \theta}$

$\frac{\partial f}{\partial x} \frac{\partial x}{\partial \theta} + \frac{\partial f}{\partial y} \frac{\partial y}{\partial \theta}$  ✓

$\frac{\partial f}{\partial x} + \frac{\partial x}{\partial \theta} + \frac{\partial f}{\partial y} + \frac{\partial y}{\partial \theta}$

None of these

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74:00

Time Left



13

Question Summary: ( Attempted Question )

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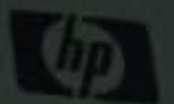
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HP L1750



Question No : 14 of 34

If  $h = f(x, y)$ ,  $x = r \cos \theta$  and  $y = r \sin \theta$ , where then using the chain rule,  $\frac{\partial h}{\partial r} = \dots\dots\dots$

Answer ( Please select your correct option )

$\cos \theta \frac{\partial f}{\partial \theta} + \sin \theta \frac{\partial f}{\partial r}$

$\cos \theta \frac{\partial f}{\partial x} + \sin \theta \frac{\partial f}{\partial y}$  ✓

$\cos \theta \frac{\partial f}{\partial x} - \sin \theta \frac{\partial f}{\partial y}$

None of these

Start Time: 9:41 AM

74:00

Time Left



14

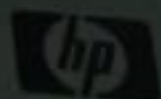
Question Summary : ( Attempted Question )

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### MTH631 Real Analysis II

Question No : 9 of 34

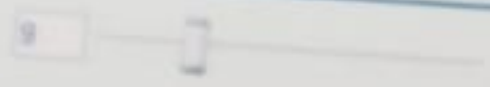
A point on the graph of a function at which the tangent line is parallel to  $x$ -axis is called the .....

Answer ( Please select your correct option )

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

Start Time: 9:41 AM

**74:00**  
Time Left



Question Summary : ( Attempted Question )

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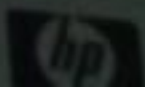
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Question No : 5 of 34

If  $f$  and  $g$  are continuous functions at the point  $X_0$  in  $R^n$ , then  $\frac{f}{g}$  is continuous at  $X_0$  provided that \_\_\_\_\_

Answer ( Please select your correct option )

$g(X_0) = 0$

$g(X_0) \neq 0$

$f(X_0) - g(X_0) = 0$

None of these

Start Time: 9:41 AM

78:00  
Time Left



5

Question Summary : ( Attempted Question )

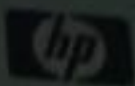
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\_\_\_\_\_ is the only region in  $\mathbb{R}$ .

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Answer ( Please select your correct option )

- Set of finite points of  $\mathbb{R}$
- Interval
- Any finite sequence of  $\mathbb{R}$
- None of these

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**81:00**  
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3

Question Summary : ( Attempted Question )

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
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Question No : 4 of 34

For the function  $f(x,y) = \frac{xy}{x^2+y^2}$ , the limit of  $f(x,y)$  as  $(x,y) \rightarrow (0,0)$  along the line  $y = x$  is —

Answer ( Please select your correct option )

  $\frac{1}{2}$   $-\frac{1}{2}$  0 1

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80:00

Time Left



4

Question Summary : ( Attempted Question )

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## MTH631 Real Analysis II

Question No : 2 of 34

If  $H$  is an open covering of a compact subset  $S$  then,  $S$  can be covered by \_\_\_\_\_

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Answer ( Please select your correct option )

infinitely many sets from  $H$

finitely many sets from  $H$

atleast one set from  $H$

None of these

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83:00

Time Left



2

Question Summary : ( Attempted Question )

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### MTH631 Real Analysis II

Question No : 15 of 34

If  $p(X)$  is a homogeneous polynomial of degree  $r$  in  $X - X_0$ . If  $p(X) \leq 0$  for all  $X \neq X_0$ . Then  $p$  is called \_\_\_\_\_

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Answer ( Please select your correct option )

positive semidefinite

positive definite

negative semidefinite

negative definite

Start Time: 9:41 AM

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Time Left



15

Question Summary : ( Attempted Question )

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
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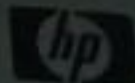
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A function of the form  $L(X) = f_x(X_0)x_1 + f_{x_2}(X_0)x_2 + \dots + f_{x_n}(X_0)x_n$  is called \_\_\_\_\_

Answer ( Please select your correct option )

quadratic function

differential of  $f$  at  $X_0$

constant function

None of these

Start Time: 9:41 AM

74:00

Time Left



12

Question Summary : ( Attempted Question )

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
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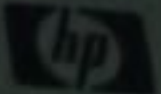
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### MTH631 Real Analysis II

Question No : 15 of 34

If  $p(X)$  is a homogeneous polynomial of degree  $r$  in  $X - X_0$ . If  $p(X) \leq 0$  for all  $X \neq X_0$ . Then  $p$  is called \_\_\_\_\_

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Answer ( Please select your correct option )

positive semidefinite

positive definite

negative semidefinite

negative definite

Start Time: 9:41 AM

**71:00**  
Time Left



15

Question Summary : ( Attempted Question )

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
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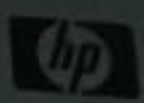
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If  $h = f(x, y)$ ,  $x = f(r, \theta)$  and  $y = f(r, \theta)$ , then using the chain rule,  $\frac{\partial h}{\partial \theta} = \dots\dots\dots$

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Answer ( Please select your correct option )

$\frac{\partial f}{\partial r} \frac{\partial r}{\partial \theta} + \frac{\partial f}{\partial r} \frac{\partial r}{\partial \theta}$

$\frac{\partial f}{\partial x} \frac{\partial x}{\partial \theta} + \frac{\partial f}{\partial y} \frac{\partial y}{\partial \theta}$  ✓

$\frac{\partial f}{\partial x} + \frac{\partial x}{\partial \theta} + \frac{\partial f}{\partial y} + \frac{\partial y}{\partial \theta}$

None of these

Start Time 9:41 AM

74:00

Time Left



13

Question Summary: ( Attempted Question )

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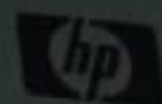
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HP L1750



Question No : 14 of 34

If  $h = f(x, y)$ ,  $x = r \cos \theta$  and  $y = r \sin \theta$ , where then using the chain rule,  $\frac{\partial h}{\partial r} = \dots\dots\dots$

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Answer ( Please select your correct option )

$\cos \theta \frac{\partial f}{\partial \theta} + \sin \theta \frac{\partial f}{\partial r}$

$\cos \theta \frac{\partial f}{\partial x} + \sin \theta \frac{\partial f}{\partial y}$  ✓

$\cos \theta \frac{\partial f}{\partial x} - \sin \theta \frac{\partial f}{\partial y}$

None of these

Start Time: 9:41 AM

74:00

Time Left



14

Question Summary : ( Attempted Question )

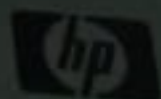
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A function  $f$  is said to be absolutely integrable on  $[a, b)$  if  $f$  is locally integrable on  $[a, b)$  and -----

Answer ( Please select your correct option )

$\int_a^b |f(x)| dx < \infty$  ✓

$\int_a^b |f(x)| dx = \infty$

$\int_a^b |f(x)| dx \geq \infty$

None of these

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18

Question Summary : ( Attempted Question )

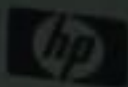
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A function  $f$  is said to be absolutely integrable on  $[a, b)$  if  $f$  is locally integrable on  $[a, b)$  and -----

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Answer ( Please select your correct option )

$\int_a^b |f(x)| dx < \infty$  ✓

$\int_a^b |f(x)| dx = \infty$

$\int_a^b |f(x)| dx \geq \infty$

None of these

Start Time: 9:41 AM

65:00

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18

Question Summary : ( Attempted Question )

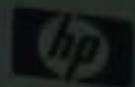
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An absolutely convergent integral is always \_\_\_\_\_

Answer ( Please select your correct option )

divergent

convergent

conditionally convergent

None of these

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62:00

Time Left



19

Question Summary : ( Attempted Question )

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### MTH631 Real Analysis II

Question No : 20 of 34

If  $f$  is locally integrable on  $[a, b)$  and  $\int_a^b |f(x)| dx < \infty$ , then  $\int_a^b f(x) dx$  is \_\_\_\_\_

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Answer ( Please select your correct option )

divergent

conditionally convergent

convergent ✓

None of these

Start Time: 9:41 AM

62:00

Time Left



20

Question Summary : ( Attempted Question )

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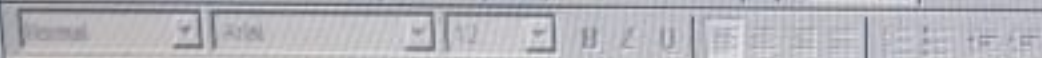
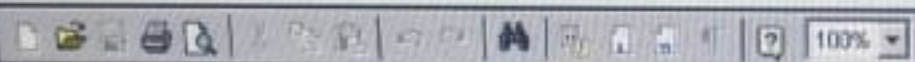
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Suppose  $U_0 \in T$  is a limit point of  $T$ ,  $g$  is continuous at  $U_0$  and  $f$  is continuous at  $X_0 = G(U_0)$ . Then, show that  $f \circ g$  is continuous at  $U_0$ .

Answer (Please click here to Add Answer)



Start Time: 9:41 AM

62:00

Time Left



34



Question Summary : ( Attempted Question )

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
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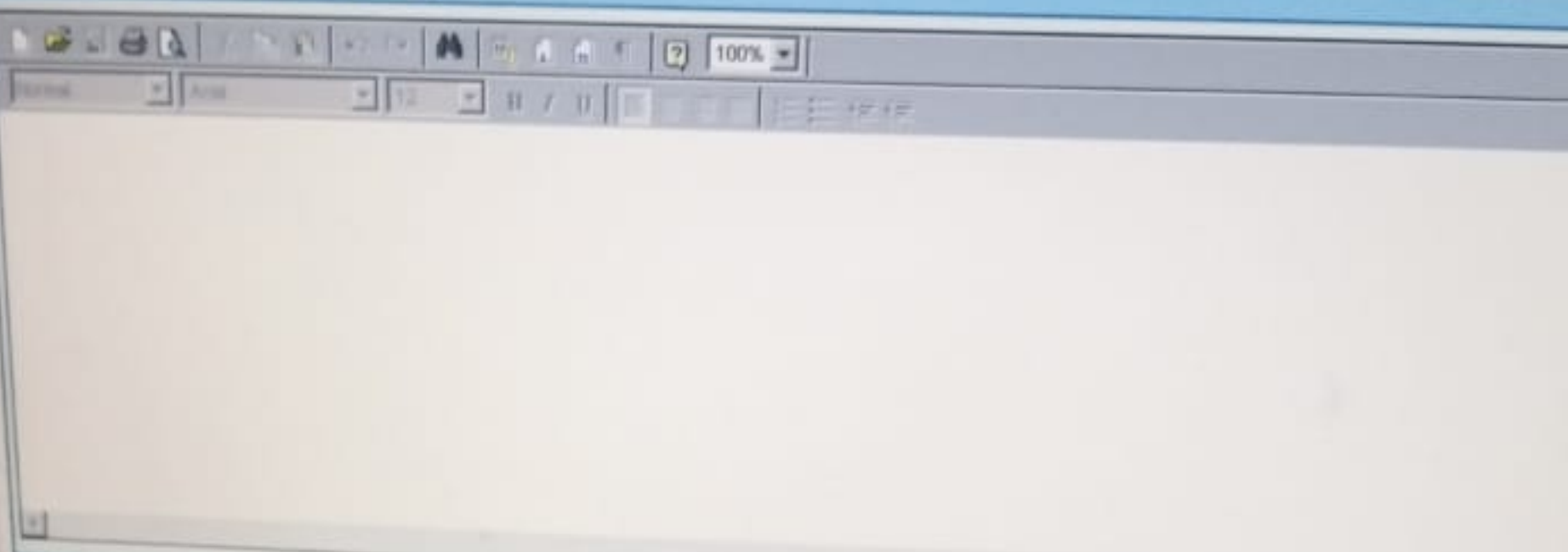
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Show that  $(0,0)$  is a critical point of the function  $p(x,y) = x^2 - 2xy + y^2 - x^4 - y^4$  and it has positive semidefinite second differentials at  $(0,0)$

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Answer ( Please click here to Add Answer )



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**62:00**  
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33

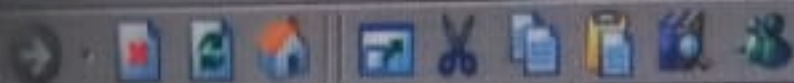


Question Summary : ( Attempted Question )

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### MTH631 Real Analysis II

Question No : 32 of 34

Marks:

Define a locally integrable function. Also show that the function  $f(x) = \log x$  is locally integrable on  $(0, 1)$ .

Answer ( [Please click here to Add Answer](#) )



Empty text area for providing the answer to the question.

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Question Summary : ( Attempted Question )

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
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