MTH301 MIDTERM GRAND QUIZ FILE

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MTH301:Grand Quiz

Question # 1 of 30 (Start time: 11:19:28 AM, 26 December 2020)

If $\lim_{(x,y,z)\to(x_0,y_0,z_0)} f(x,y,z) = L_1$ then

Select the correct option

- $\lim_{(x,y,z)\to(x_0,y_0,z_0)} cf(x,y,z) = cL_1$ if c is conatant — Ans Lec#5
- $\lim_{(x,y,z)\to(x_0,y_0,z_0)} cf(x,y,z) = cL_1$ if c is not conatant
- $\lim_{(x,y,z)\to(x_0,y_0,z_0)} cf(x,y,z) = cL_1$ if c is a function of x
- $\lim_{(x,y,z)\to(x_0,y_0,z_0)} cf(x,y,z) = cL_1$ if c is a function of y

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Question # 2 of 30 (Start time: 11:20:21 AM, 26 December 2020)

If the partial derivative (w.r.t 'x' or 'y') at any point on the surface:

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

is Infinity, then tangent plane at that point will be perpendicular to--------.

Select the correct option

- XY-plane — Ans
- YZ-plane
- XZ-plane
- Any arbitrary plane

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Question # 3 of 30 (Start time: 11:22:38 AM, 26 December 2020)

Let f be a function of two variables at a critical point $(0, 2)$, $f_{xx}(0, 2) = 4$, $f_{yy}(0, 2) = 0$ and $f_{xy}(0, 2) = 4$ so $D = f_{xx}(0, 2) f_{yy}(0, 2) - f^2_{xy}(0, 2) = -16$

Select the correct option

- then f has a relative maximum at $(0, 2)$.
- then no conclusion can be drawn.
- then f has a relative minimum at $(0, 2)$.
- then f has a saddlepoint at $(0, 2)$.

Ans
Lec#15

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Question # 4 of 30 (Start time: 11:24:25 AM, 26 December 2020)

$$\int_0^{\ln 3} \int_0^{\ln 5} e^{u+v}\, du\, dv = \text{----------}$$

Select the correct option

- 3
- 5
- 8
- 15

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Question # 5 of 30 (Start time: 11:26:09 AM, 26 December 2020)

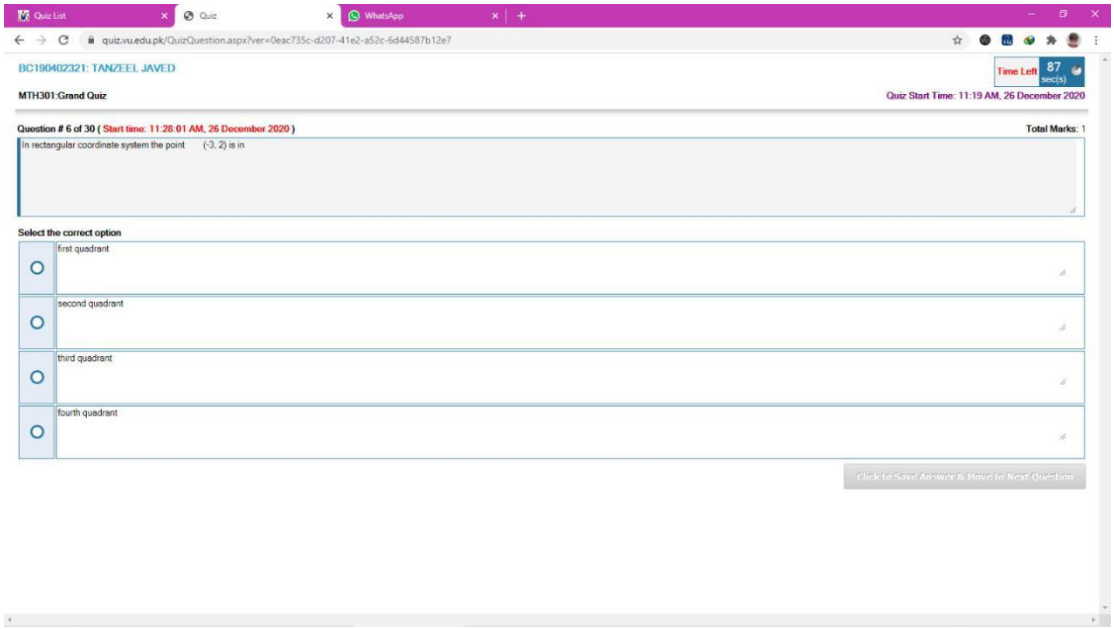
What is the absolute minimum value of the function below on the interval [−3, 0]

$$f(x) = \sqrt[3]{(x+1)^2} + \frac{2x}{5}$$

Select the correct option

- $\frac{-2}{5}$
- $\frac{1}{5}$
- $-\frac{\sqrt[3]{4}}{5}$
- $\sqrt[3]{4} - 1.2$

% MathTI1!



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Question # 7 of 30 (Start time: 11:29:23 AM, 26 December 2020)

A plane can be completely determined if we know

Select the correct option

- two parallel lines passing through that plane
- a point and a line passing through that point
- a point and direction of perpendicular to it
- two points anywhere on the plane

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Question # 8 of 30 (Start time: 11:31:14 AM, 26 December 2020)

spherical coordinate ρ is related to the rectangular coordinate as

Select the correct option

- $\rho = \sqrt{(x + y + z)}$
- $\rho = x + y + z$
- $\rho = \sqrt{(x^2 + y^2 + z^2)}$
- $\rho = \frac{z}{\sqrt{(x^2 + y^2 + z^2)}}$

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Question # 9 of 30 (Start time: 11:32:44 AM, 26 December 2020)

$$\int_0^{\ln 6}\int_0^{\ln 3} f(x,\,y)\,dx\,dy = \int_0^{\ln 3}\int_0^{\ln 6} f(x,\,y)\,dy\,dx$$

Select the correct option

- True

Ans
Not sure

- False

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Question # 10 of 30 (Start time: 11:34:20 AM, 26 December 2020)

Area of double integral can be calculated by the formula: area of $R =$ _____.

Select the correct option

- $\frac{1}{\text{area of } R}\iint_R dA$
- $\iint_R dA$
- $\int_R f(x,y)\,dx\,dy$
- $\iint_R f(x,y)\,dy$

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Question # 11 of 30 (Start time: 11:36:04 AM, 26 December 2020)

Domain of the following function is

$$f(x) = \frac{(x+2)}{|(x-2)(x-8)|}$$

Select the correct option

- $\forall x \in \mathbb{R}; x > 2$
- $\forall x \in \mathbb{R}; x > 8$
- $\forall x \in \mathbb{R}; x < 2$
- None of these

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Question # 12 of 30 (Start time: 11:37:41 AM, 26 December 2020)

Which coordinate system uses two distances and one angle?

Select the correct option

- spherical
- cylindrical

Ans
Lec#4

- rectangular
- none of these

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Question # 13 of 30 (Start time: 11:38:54 AM, 26 December 2020)

If the velocity components of a bicycle are 3m/s towards east and 4m/s towards north then the speed(magnitude of velocity) is ----------m/s.

Select the correct option

- 1
- 12
- 7
- 5

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Question # 14 of 30 (Start time: 11:40:34 AM, 26 December 2020)

If $w = f(x, y)$ where $x = g(r, s)$ then $\frac{\partial w}{\partial s} =$

Select the correct option

- $\frac{\partial w}{\partial s} = \frac{dw}{ds}\frac{\partial s}{\partial s} - \frac{dw}{dy}\frac{\partial y}{\partial s}$
- Ans $\frac{\partial w}{\partial s} = \frac{dw}{dx}\frac{\partial x}{\partial s} + \frac{dw}{dr}\frac{\partial r}{\partial s}$
- $\frac{\partial w}{\partial s} = \frac{dw}{ds}\frac{\partial s}{\partial r} + \frac{dw}{dy}\frac{\partial y}{\partial s}$
- $\frac{\partial w}{\partial s} = \frac{dw}{dr}\frac{\partial r}{\partial s} - \frac{dw}{dr}\frac{\partial r}{\partial s}$

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Question # 15 of 30 (Start time: 11:41:46 AM, 26 December 2020)

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

Select the correct option

- $xt \cos t$
- $-xt \cos t$
- Ans $ut \cos t$
- $-ut \cos t$

Question # 16 of 30 (Start time: 11:43:33 AM, 26 December 2020)

The value $f(x_0, y_0)$ is a relative maximum of $f(x, y)$ on domain D, if there exists an open disc $K \subset D$ with center (x_0, y_0) and radius r such that - - -

Select the correct option

- $f(x_0, y_0) \leq f(x, y)$ for all $(x, y) \in K$
- $f(x_0, y_0) = f(x, y)$ for all $(x, y) \in K$
- $f(x_0, y_0) < f(x, y)$ for all $(x, y) \in K$
- Ans $f(x_0, y_0) \geq f(x, y)$ for all $(x, y) \in K$

Lec#14

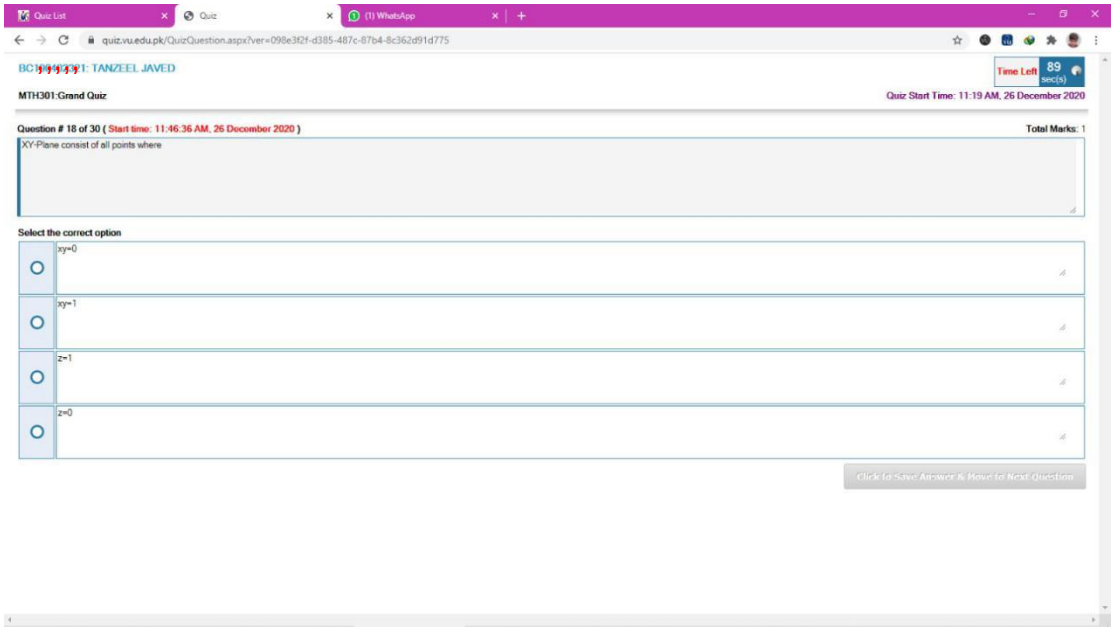
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Question # 17 of 30 (Start time: 11:45:20 AM, 26 December 2020)

$$\iint_R f(x,y)\,dA \geqslant \iint_R cg(x,y)\,dA \quad if$$

Select the correct option

- $f(x,y) \geqslant g(x,y)$ Ans Lec#19
- $f(x,y) \leqslant g(x,y)$
- $f(x,y) > g(x,y)$
- $f(x,y) < g(x,y)$



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Question # 19 of 30 (Start time: 11:47:46 AM, 26 December 2020)

For which of the following values of "y", the partial derivative of

$$z = \frac{2}{y(x-1)}$$

Select the correct option

- R
- R-{1}
- R-{0} Ans
- R-{1,0}

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Question # 20 of 30 (Start time: 11:49:00 AM, 26 December 2020)

$$\int_0^{10} (x^3y + y^2)\ dy = \text{-------}$$

Select the correct option

- $1000y^2 + \frac{10y^3}{3}$
- $100x^3 + 1000$
- Answer $50x^3 + \frac{1000}{3}$
- $500y^3 + \frac{1000}{3}$

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Question # 21 of 30 (Start time: 11:50:44 AM, 26 December 2020)

If two of the vectors are collinear among three non-zero vectors then their Scalar Triple Product is----------.

Select the correct option

- 3
- -1
- 1

Ans
Lec#11

- 0

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Question # 22 of 30 (Start time: 11:52:27 AM, 26 December 2020)

If the region is bounded the left and right by vertical lines $x = a$ and $x = b$ and is bounded below and above by curves, $y = g_1(x)$ and $y = g_2(x)$, where $g_1(x) \leqslant g_2(x)$ for $a \leqslant x \leqslant b$. Then $\iint_R f(x,y)\,dA =$ _____.

Select the correct option

- $\int_a^b f(x,y)\,dx\,dy$
- $\int_{g_1(x)}^{g_2(x)} f(x,y)\,dy\,dx$

Ans
Lec#20

- $\int_a^b \int_{g_1(x)}^{g_2(x)} f(x,y)\,dy\,dx$
- $\int f(x,y)\,dy\,dx$

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Question # 23 of 30 (Start time: 11:54:06 AM, 26 December 2020)

If $f(x,y) = y^2 e^x + 1$, then $\frac{\partial^2 f}{\partial x^2}$ is _____.

Select the correct option

- e^x
- $2e^x$
- $e^x y^2$
- $2y e^x$

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Question # 24 of 30 (Start time: 11:55:54 AM, 26 December 2020)

$\int_0^1 \int_0^1 dx\, dy =$ _____.

Select the correct option

- 0 Ans Lec#18
- 1
- 2
- 3

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Question # 25 of 30 (Start time: 11:57:07 AM, 26 December 2020)

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

Select the correct option

- 0 Answer
- 1
- 2
- None of these

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Question # 27 of 30 (Start time: 11:59:52 AM, 26 December 2020)

Value of the function $f(x,y,z)=xy+z$ at the point $(1,x^3,y^2)$

Select the correct option

- Answer x^3+y^2
- $xy+z^2$
- $y+z$
- x^3+z

Question # 28 of 30 (Start time: 12:01:00 PM, 26 December 2020)

Expression for the double integral for the volume of a solid bounded above by z=8-x-y and below by rectangle R=$0 \leqslant x \leqslant 4,\ 5 \leqslant y \leqslant 8$ is.....

Select the correct option

- $V = \int_5^8 \int_0^4 (8 - x - y)dxdy$
- $V = \int_5^8 \int_0^4 (8 - x - y)dydx$
- $V = \int_0^4 \int_5^8 (8 - x - y)dxdy$
- $V = \int_5^8 \int_0^4 (8 - x - y)dx$

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Question # 29 of 30 (Start time: 12:02:50 PM, 26 December 2020)

Let f be a function of two variables with continuous 2nd ordered partial derivatives in some circle centered at a critical point$(x_0, y_0)$and let$D = f_{xx}(x_0, y_0)f_{yy}(x_0, y_0) - f^2_{xy}(x_0, y_0)$.

Select the correct option

- $if D > 0 and f_{xx}(x_0, y_0) > 0$, then f has a relative maximum at(x_0, y_0).
- $if D = 0$, then no conclusion can be drawn.
- $if D > 0 and f_{xx}(x_0, y_0) < 0$, then f has a relative minimum at(x_0, y_0).
- $if D < 0 and f_{xx}(x_0, y_0) > 0$, then f has a relative maximum at(x_0, y_0).

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Question # 30 of 30 (Start time: 12:04:13 PM, 26 December 2020)

If the velocity (V) of a car is 20m/s east-north and making angle 60-degree with east then the component of velocity in the direction of east is ----------

Select the correct option

○	$-10\sqrt{3}$
○	-10
○	$10\sqrt{3}$
○	10 Ans

Remember me in your Prayers
Thanks & Regards
VU Learning (MARIA PARVEEN)

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