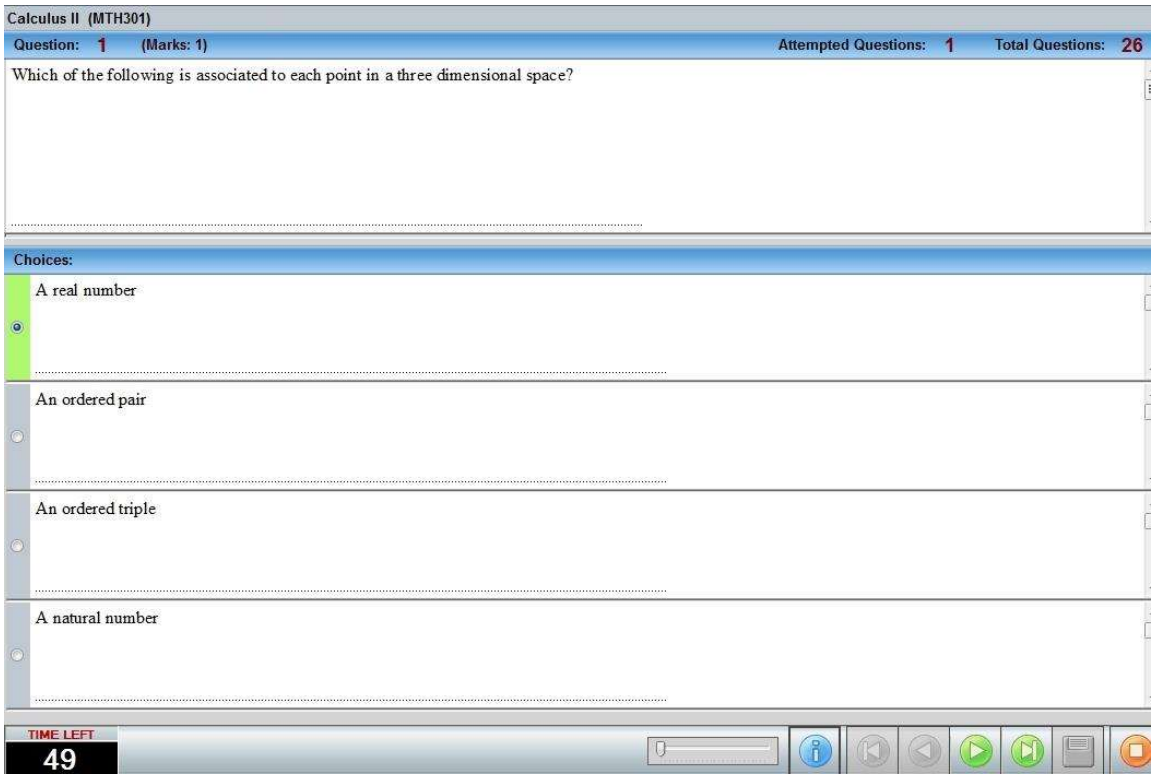
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Calculus II (MTH301)

Question: 2 (Marks: 1) Attempted Questions: 1 Total Questions: 26

What is the distance between points (3, 2, 0) and (1, 0, -1)?

Choices:

3

$\sqrt{6}$

$\sqrt{3}$

$\sqrt{10}$

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Calculus II (MTH301)

Question: 3 (Marks: 1) Attempted Questions: 2 Total Questions: 26

Equation of the circular disk with radius a and origin at $(0,0)$ is given by . . . . . .

Choices:

$x^2 + y^2 = a^2$

$x^2 + y^2 \geq a^2$

$x^2 + y^2 \leq a^2$

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Calculus II (MTH301)

Question: 4 (Marks: 1) Attempted Questions: 3 Total Questions: 26

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

Choices:

Plane

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Sphere

Curve

None of these

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Calculus II (MTH301)

Question: 5 (Marks: 1) Attempted Questions: 4 Total Questions: 26

If a function is not defined at some point, then its limit ---------- exist at that point.

Choices:

Always

Never

May

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Calculus II (MTH301)

Question: 6 (Marks: 1) Attempted Questions: 5 Total Questions: 26

The surface $z = \ln(x^2 + y^2)$ has a hole at the point $(0, 0)$, therefore, it will be a . . . . . function.

Choices:

- continuous
- discontinuous
- differentiable
- differentiable but discontinuous

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Calculus II (MTH301)

Question: 7 (Marks: 1) Attempted Questions: 6 Total Questions: 26

Suppose $f(x, y) = x^3 e^{xy}$. Which of the following options is correct?

Choices:

- $\frac{\partial f}{\partial x} = 3x^2 e^{xy} + x^3 y e^{xy}$
- $\frac{\partial f}{\partial x} = 3x^2 e^{xy} + x^4 e^{xy}$
- $\frac{\partial f}{\partial x} = 3x^2 e^{xy}$
- $\frac{\partial f}{\partial x} = 3x^2 y e^{xy}$

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Calculus II (MTH301)

Question: 8 (Marks: 1) Attempted Questions: 7 Total Questions: 26

If $f(x,y)$ and all of its partial derivatives are continuous then $\frac{\partial^3 f}{\partial y^2 \partial x} =$.....

Choices:

$\frac{\partial^3 f}{\partial x^2 \partial y}$

$\frac{\partial^3 f}{\partial x \partial y^2}$

$\frac{\partial^2 f}{\partial y^2} \cdot \frac{\partial f}{\partial x}$

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Calculus II (MTH301)

Question: 9 (Marks: 1) Attempted Questions: 8 Total Questions: 26

If $u = f(r,s)$ and $r = g(t)$, $s = h(t)$, then r and s are called

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Choices:

Dependent variables

Free variables

Intermediate variable

None of these

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Calculus II (MTH301)

Question: 10 (Marks: 1) Attempted Questions: 9 Total Questions: 26

If two vectors $\vec{a}$ and $\vec{b}$ have the relation $\vec{a} = \lambda\vec{b}$ where λ is a none-zero scalar then $\vec{a}$ and $\vec{b}$ are . . . . . to each other.

Choices:

- Orthogonal
- Non-parallel
- Parallel
- None of these

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Calculus II (MTH301)

Question: 11 (Marks: 1) Attempted Questions: 10 Total Questions: 26

$f_x(p_x)(x-x_o)+f_y(p_z)(y-y_o)+f_z(p_z)(z-z_o)=0$ is the equation of . . . . . .

Choices:

- Normal plane
- Point slope form of line
- Gradient of function $f(x,y,z)$
- Tangent plane

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Calculus II (MTH301)

Question: 12 (Marks: 1) Attempted Questions: 12 Total Questions: 26

Given a surface $f(x, y, z) = 0$. The direction ratios of a line normal to the surface are . . . .

. . . . . .

Choices:

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

f_{xx}, f_{yy}, f_{zz}

$f(0), f(0), f(0)$

f_x, f_y, f_z

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Calculus II (MTH301)

Question: 13 (Marks: 1) Attempted Questions: 12 Total Questions: 26

The two normal lines for the surfaces $f(x, y, z) = 0$ and $g(x, y, z) = 0$, are orthogonal if and only if . . . . . where f_x, f_y, f_z and g_x, g_y, g_z are direction ratios for the two normal lines respectively.

Choices:

$f_x g_y + f_y g_z + f_z g_x = 0$

$f_x g_x + f_y g_y + f_z g_z \geq 0$

$f_x g_x + f_y g_y + f_z g_z = 0$

$f_x + f_y + f_z + g_x + g_y + g_z = 0$

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Calculus II (MTH301)

Question: 14 (Marks: 1) Attempted Questions: 13 Total Questions: 26

For a function $z = f(x, y)$, the total differential is defined as . . . . . .

Choices:

$dz = f_x(x, y)dx - f_y(x, y)dy$

$dz = f_x(x, y)dx + f_y(x, y)dy$

$dz = f_x(x, y)dy - f_y(x, y)dx$

$dz = f_x(x, y)dy + f_y(x, y)dx$

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Calculus II (MTH301)

Question: 15 (Marks: 1) Attempted Questions: 14 Total Questions: 26

At the critical point (x_0, y_0), if $D = f_{xx}(x_0y_0)f_{yy}(x_0y_0) - f_{xy}^{\ 2}(x_0y_0) = 0$ then . . . . . .

Choices:

f has relative maximum at (x_0, y_0)

f has relative minimum at (x_0, y_0)

f has saddle point at (x_0, y_0)

No conclusion can be drawn.

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Calculus II (MTH301)

Question: 16 (Marks: 1) Attempted Questions: 15 Total Questions: 26

For a function $f(x)$, if $f'(x)$ is equal to some non-zero constant, then $f(x)$ will have . . . . . .

Choices:

- At least one critical point
- No critical point
- Non-zero critical points
- None of these

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Calculus II (MTH301)

Question: 17 (Marks: 1) Attempted Questions: 16 Total Questions: 26

Let x, y, z be the length, width and height of a rectangular box. The area of bottom will be . . . . . .

Choices:

- $A = yz$
- $A = xz$
- $A = xy$
- $A = xyz$

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Calculus II (MTH301)

Question: 18 (Marks: 1) Attempted Questions: 17 Total Questions: 26

Double integral of a function $f(x,y)$ represents . . . . . of the region between the surface defined by the function and the plane which contains its domain.

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Choices:

- Perimeter
- Volume
- Area
- Circumference

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Calculus II (MTH301)

Question: 19 (Marks: 1) Attempted Questions: 18 Total Questions: 26

If $R = \{(x,y) : 2 \le x \le 4 \text{ and } 0 \le y \le 1\}$, then $\iint_R (4xe^{2y})dA =$

. . . . . .

Choices:

- $\int_0^1 \int_2^4 (4xe^{2y})dydx$
- $\int_0^1 \int_2^4 (4xe^{2y})dxdy$
- $\int_1^4 \int_0^2 (4xe^{2y})dxdy$
- $\int_1^4 \int_0^2 (4xe^{2y})dydx$

TIME LEFT 40

Calculus II (MTH301)

Question: 20 (Marks: 1) Attempted Questions: 19 Total Questions: 26

If $R = \{(x, y) : 0 \le x \le 4 \text{ and } 0 \le y \le 9\}$, then $\iint_R (3x - 4x\sqrt{xy})\,dA =$

Choices:

$\int_0^9 \int_0^4 (3x - 4x\sqrt{xy})\,dy\,dx$

$\int_0^4 \int_4^9 (3x - 4x\sqrt{xy})\,dx\,dy$

$\int_4^9 \int_0^0 (3x - 4x\sqrt{xy})\,dx\,dy$

$\int_0^4 \int_0^9 (3x - 4x\sqrt{xy})\,dy\,dx$

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Calculus II (MTH301)

Question: 21 (Marks: 2) Attempted Questions: 20 Total Questions: 26

Write down the equation of a plane passing through the point $(2, -3, 1)$ and perpendicular to the vector $\vec{n} = 16\,\hat{i} + 6\,\hat{j} + 6\,\hat{k}$.

Answer:

TIME LEFT 40

Calculus II (MTH301)

Question: 23 (Marks: 3) Attempted Questions: 20 Total Questions: 26

Let $y = \frac{1}{x^2}$. If x changes from 3 to 3.3, find the approximate change in the value of y using differential dy.

Answer:

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Calculus II (MTH301)

Question: 24 (Marks: 3) Attempted Questions: 20 Total Questions: 26

Evaluate the following double integral.

$\iint (3x - y)\, dy\, dx$

Answer:

TIME LEFT 39

Calculus II (MTH301)

Question: 25 (Marks: 5) Attempted Questions: 20 Total Questions: 26

Find equation of tangent plane to the surface $f(x, y, z) = 4x^2 + 9y^2 - z$ at the point $(-2, -1, 25)$

Answer:

TIME LEFT 39

Calculus II (MTH301)

Question: 26 (Marks: 5) Attempted Questions: 20 Total Questions: 26

Evaluate the double integral

$$\int_{-1}^{1} \int_{0}^{2} (1 - 6x^2 y)\, dx\, dy$$

Answer:

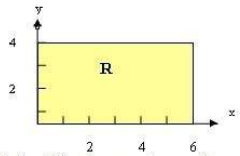
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Calculus II (MTH301)

Question: 22 (Marks: 2) Attempted Questions: 20 Total Questions: 26

Let the function $f(x, y)$ is continuous in the region R, where R is a rectangle as shown below.



In the following equation, replace question mark (?) with the correct value.

$$\iint_R f(x, y)\, dA = \int_?^? \int_?^? f(x, y)\ ____?____$$

Answer:

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