

Question No : 1 of 26

Marks: 1 (Budgeted Time 1 Min)

Area of a circle of radius r ($A = \pi r^2$) is a function of

Answer (Please select your correct option)

☐ One variable

☐ Two variables

☐ Three variables

☐ Constant

Made By: Waqar Siddhu

Question No : 2 of 26

Marks: 1 (Budgeted Time 1 Min)

π is an example of -----

Answer (Please select your correct option)

☐ Irrational numbers

☐ Rational numbers

☐ Integers

☐ Natural numbers

Made By: Waqar Siddhu

Question No : 2 of 26

Marks: 1 (Budgeted Time 1 Min)

π is an example of -----

Answer (Please select your correct option)

☐ Irrational numbers

☐ Rational numbers

☐ Integers

☐ Natural numbers

Made By: Waqar Siddhu

Question No : 3 of 26

Marks: 1 (Budgeted Time 1 Min)

Equation of the parabola opening downwards is where $a > 0$.

Answer (Please select your correct option)

☐ $y = ax^2 + bx + c$

☐ $y = -ax^2 + bx + c$

☐ $y = ax^2 - bx + c$

☐ $y = ax^2 - bx$

Made By: Waqar Siddhu

Question No : 4 of 26

Marks: 1 (Budgeted Time 1 Min)

Which of the following has the general equation of the form $ax + by + cz + d = 0$, where a,b,c,d are real numbers.

Answer (Please select your correct option)

☐ Circle

☐ Plane

☐ Line

☐ Curve

Made By: Waqar Siddhu

Question No : 5 of 26

Marks: 1 (Budgeted Time 1 Min)

If rectangular co-ordinates of a point are $(1, \sqrt{3}, -2)$, then value of "r" in cylindrical co-ordinates is

Answer (Please select your correct option)

☐ $\sqrt{2}$

☐ 2

☐ $2\sqrt{2}$

☐ $-2\sqrt{2}$

Made By: Waqar Siddhu

Question No : 6 of 26

Marks: 1 (Budgeted Time 1 Min)

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

☐ $\frac{\partial f}{\partial y} = 3x^3 e^{xy}$

☐ $\frac{\partial f}{\partial y} = x^3 e^{xy}$

☐ $\frac{\partial f}{\partial y} = x^4 e^{xy}$

☐ $\frac{\partial f}{\partial y} = x^3 y e^{xy}$

Made By: Waqar Siddhu

Question No : 7 of 26

Marks: 1 (Budgeted Time 1 Min)

For a function $f(x, y, z)$, the equation $\frac{\partial^2 f}{\partial^2 x} + \frac{\partial^2 f}{\partial^2 y} + \frac{\partial^2 f}{\partial^2 z} = 0$ is known as -----

Answer (Please select your correct option)

- ☐ Gauss Equation
- ☐ Euler's equation
- ☐ Laplace's Equation
- ☐ Stoke's Equation

Made By: Waqar Siddhu

Question No : 8 of 26

Marks: 1 (Budgeted Time 1 Min)

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

Answer (Please select your correct option)

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

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

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

Made By: Waqar Siddhu

Question No : 9 of 26

Marks: 1 (Budgeted Time 1 Min)

If $w = f(z)$ and $z = g(r, s)$, then $\frac{\partial w}{\partial s} = \dots\dots\dots$

Answer (Please select your correct option)

☐ $\frac{\partial w}{\partial s} \frac{\partial s}{\partial z}$

☐ $\frac{\partial w}{\partial z} \cdot \frac{\partial z}{\partial r} \cdot \frac{\partial r}{\partial s}$

☐ $\frac{\partial w}{\partial z} \cdot \frac{\partial z}{\partial s}$

☐ $\frac{\partial w}{\partial z} \frac{\partial z}{\partial r} + \frac{\partial w}{\partial z} \frac{\partial z}{\partial s}$

Made By: Waqar Siddhu

Question No : 10 of 26

Marks: 1 (Budgeted Time 1 Min)

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.

Answer (Please select your correct option)

☐ Orthogonal

☐ Non-parallel

☐ Parallel

☐ None of these

Made By: Waqar Siddhu

Question No : 11 of 26

Marks: 1 (Budgeted Time 1 Min)

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

Answer (Please select your correct option)

☐ $dz = f_x(x, y)dx - f_y(x, y)dy$

☐ $dz = f_x(x, y)dx + f_y(x, y)dy$

☐ $dz = f_x(x, y)dy - f_y(x, y)dx$

☐ $dz = f_x(x, y)dy + f_y(x, y)dx$

Made By: Waqar Siddhu

Question No : 12 of 26

Marks: 1 (Budgeted Time 1 Min)

For a function $f(x,y)$ to have both absolute maximum and minimum, it must be Continuous on set R.

Answer (Please select your correct option)

- ☐ a closed and bounded
- ☐ an open and bounded
- ☐ a closed and unbounded
- ☐ an open and unbounded

Made By: Waqar Siddhu

Question No : 13 of 26

Marks: 1 (Budgeted Time 1 Min)

To find the critical points of a function $f(x,y)$, we put $f_x = f_y = \dots\dots\dots$

Answer (Please select your correct option)

☐ 1

☐ -1

☐ 0

☐ None of these

Made By: Waqar Siddhu

Question No : 14 of 26

Marks: 1 (Budgeted Time 1 Min)

At the critical point (x_0, y_0) , if $D = f_{xx}(x_0, y_0)f_{yy}(x_0, y_0) - f_{xy}^2(x_0, y_0) > 0$ and $f_{xx}(x_0, y_0) < 0$ then f has

Answer (Please select your correct option)

- ☐ Saddle point at (x_0, y_0)
- ☐ No conclusion can be drawn.
- ☐ Relative maximum at (x_0, y_0)
- ☐ Relative minimum at (x_0, y_0)

Made By: Waqar Siddhu

Question No : 15 of 26

Marks: 1 (Budgeted Time 1 Min)

The Extreme value theorem is applicable if the function $f(x,y)$ is on the closed interval $[a,b]$.

Answer (Please select your correct option)

☐ Continuous

☐ Differentiable

☐ Defined

☐ Defined and differentiable

Made By: Waqar Siddhu

Question No : 16 of 26

Marks: 1 (Budgeted Time 1 Min)

Let x, y, z be the length, width and height of an open rectangular box. The surface area of the box will be

Answer (Please select your correct option)

☐

$$A = xy + 2yz + 2xz$$

☐

$$A = yz + 4$$

☐

$$A = xz + yz + zx$$

☐

$$A = xyz$$

Made By: Waqar Siddhu

Question No : 17 of 26

Marks: 1 (Budgeted Time 1 Min)

Let x be the length, width and height of a cube. The area of bottom will be

Answer (Please select your correct option)

☐ $A = x^2$

☐ $A = x^3$

☐ $A = xz$

☐ $A = x + x^2$

Made By: Waqar Siddhu

Question No : 18 of 26

Marks: 1 (Budgeted Time 1 Min)

A double integral and iterated integral become identical provided that the integrand is over the given rectangular region.

Answer (Please select your correct option)

☐ Bounded

☐ Discontinuous

☐ Continuous

☐ Defined

Made By: Waqar Siddhu

Question No : 19 of 26

Marks: 1 (Budgeted Time 1 Min)

If $R = \{(x, y) : 0 \leq x \leq 2 \text{ and } 1 \leq y \leq 4\}$, then $\iint_R (6x^2 + 4xy^3) dA = \dots\dots\dots$

Answer (Please select your correct option)

☐ $\int_1^4 \int_0^2 (6x^2 + 4xy^3) dy dx$

☐ $\int_0^2 \int_1^4 (6x^2 + 4xy^3) dx dy$

☐ $\int_1^4 \int_0^2 (6x^2 + 4xy^3) dx dy$

☐ $\int_0^2 \int_1^4 (6x^2 + 4xy^3) dx dy$

Made By: Waqar Siddhu

Question No : 20 of 26

Marks: 1 (Budgeted Time 1 Min)

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

Answer (Please select your correct option)

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

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

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

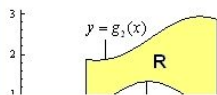
☐ $\int_0^4 \int_0^9 (3x - 4x\sqrt{xy}) dy dx$

Made By: Waqar Siddhu

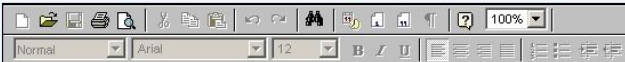
Question No : 22 of 26

Marks: 2 (Budgeted Time 4 Min)

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



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



Made By: Waqar Siddhu

Marks: 3 (Budgeted Time 6 Min)

Find Gradient of the follow
 $f(x, y) = x^2 + 4xy^2 - y^5$

Made By: Waqar Siddhu

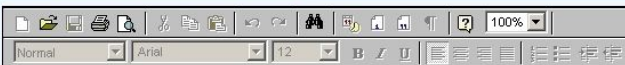
Question No : 24 of 26

Marks: 3 (Budgeted Time 6 Min)

Evaluate the following double integral.

$$\iint (x + 2y^2) \, dx \, dy$$

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



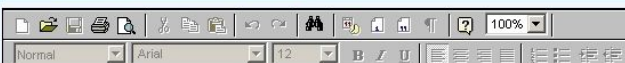
Made By: Waqar Siddhu

Question No : 25 of 26

Marks: 5 (Budgeted Time 10 Min)

Let $f(x, y) = x^2 + 3y - 3xy$ and R is the triangular region with vertices O(0, 0), A(2, 0) and B(2, 4). Find the critical points along the line segment OB at which the absolute extrema of $f(x, y)$ can occur.

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



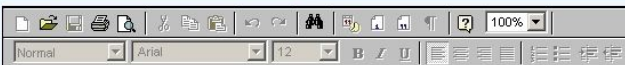
Made By: Waqar Siddhu

Question No : 26 of 26

Marks: 5 (Budgeted Time 10 Min)

Evaluate the integral $\int_0^2 \int_0^x \cos y^3 dx dy$.

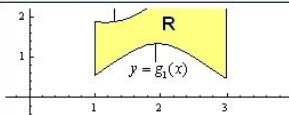
Answer ([Please click here to Add Answer](#))



Made By: Waqar Siddhu

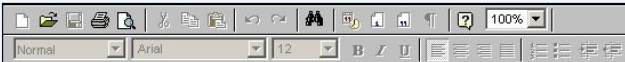
Question No : 22 of 26

Marks: 2 (Budgeted Time 4 Min)



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

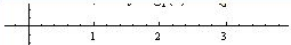
Answer (Please [click here](#) to Add Answer)



Made By: Waqar Siddhu

Question No : 22 of 26

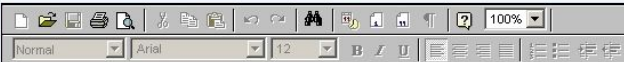
Marks: 2 (Budgeted Time 4 Min)



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

$$\iint_R f(x, y) \, dA = \int_{?}^{?} \int_{?}^{?} f(x, y) \, _____? _____$$

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



Made By: Waqar Siddhu