

Which of the following number is associated to each point on a co-ordinate line?

An integer

A real number

A rational number

A natural number

----- planes intersect at right angle to form three dimensional space.

Three

Four

Eight

Twelve

At each point of domain, the function -----

Is defined

Is continuous

Is infinite

Has a limit

Let R be a closed region in two dimensional space. What does the double integral over R calculates?

Area of R .

Radius of inscribed circle in R .

Distance between two endpoints of R .

None of these

What is the relation between the direction of gradient at any point on the surface to the tangent plane at that point ?

parallel

perpendicular

opposite direction

No relation between them.

Two surfaces are said to intersect orthogonally if their normals at every point common to them are -----

perpendicular

parallel

in opposite direction

If $R = R_1 \cup R_2$, where R_1 and R_2 are no overlapping regions then

$$\iint_{R_1} f(x, y) dA + \iint_{R_2} f(x, y) dA =$$

$$\iint_R f(x, y) dA$$

$$\iint_{R_1} f(x, y) dA \cup \iint_{R_2} f(x, y) dA$$

$$\iint_R f(x, y) dV$$

$$\iint_{R_1} f(x, y) dA \cap \iint_{R_2} f(x, y) dA$$

If $R = \{(x, y) / 0 \leq x \leq 2 \text{ and } 0 \leq y \leq 3\}$, then

$$\iint_R (1 - ye^{xy}) dA =$$

$$\int_0^2 \int_0^3 (1 - ye^{xy}) dy dx$$

$$\int_0^2 \int_0^3 (1 - ye^{xy}) dx dy$$

$$\int_2^3 \int_0^0 (1 - ye^{xy}) dx dy$$

$$\int_0^2 \int_2^3 (4xe^{2y}) dy dx$$

If $R = \{(x, y) / 0 \leq x \leq 2 \text{ and } 1 \leq y \leq 4\}$, then

$$\iint_R (6x^2 + 4xy^3) dA =$$

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

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

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

$$\int_2^4 \int_0^1 (6x^2 + 4xy^3) dx dy$$

Which of the following formula can be used to find the volume of a parallelepiped with adjacent edges formed by the vectors $\vec{a}$, $\vec{b}$ and $\vec{c}$?

$$|\vec{a} \times (\vec{b} \times \vec{c})| |\vec{a} \times (\vec{b} \times \vec{c})|$$

$$|\vec{a} \cdot (\vec{b} \cdot \vec{c})| |\vec{a} \cdot (\vec{b} \cdot \vec{c})|$$

$$|\vec{a} \cdot (\vec{b} \times \vec{c})| |\vec{a} \cdot (\vec{b} \times \vec{c})|$$

$$|\vec{a} \times (\vec{b} \cdot \vec{c})| |\vec{a} \times (\vec{b} \cdot \vec{c})|$$

Let the function $f(x, y)$ has continuous second-order partial derivatives $(f_{xx}, f_{yy} \text{ and } f_{xy})$ in some circle centered at a critical point (x_0, y_0) and let $D = f_{xx}(x_0, y_0) f_{yy}(x_0, y_0) - f_{xy}^2(x_0, y_0)$

If $D > 0$ and $f_{xx}(x_0, y_0) < 0$ then f has -----

Relative maximum at (x_0, y_0)

Relative minimum at (x_0, y_0)

Saddle point at (x_0, y_0)

No conclusion can be drawn.

If $R = \{(x, y) / 0 \leq x \leq 2 \text{ and } -1 \leq y \leq 1\}$, then

$$\iint_R (x + 2y^2) dA =$$

$$\int_{-1}^1 \int_0^2 (x + 2y^2) dy dx$$

$$\int_0^2 \int_1^{-1} (x + 2y^2) dx dy$$

$$\int_{-1}^1 \int_0^2 (x + 2y^2) dx dy$$

$$\int_1^2 \int_{-1}^0 (x + 2y^2) dx dy$$

Let $w = f(x, y, z)$ and $x = g(r, s)$, $y = h(r, s)$, $z = t(r, s)$ then by chain rule $\frac{\partial w}{\partial r} =$

$$\frac{\partial w}{\partial x} \frac{\partial x}{\partial r} + \frac{\partial w}{\partial y} \frac{\partial y}{\partial r} + \frac{\partial w}{\partial z} \frac{\partial z}{\partial r}$$

$$\frac{\partial w}{\partial r} \frac{\partial x}{\partial r} + \frac{\partial w}{\partial r} \frac{\partial y}{\partial r} + \frac{\partial w}{\partial r} \frac{\partial z}{\partial r}$$

$$\frac{\partial w}{\partial x} \frac{\partial x}{\partial r} \frac{\partial x}{\partial s} + \frac{\partial w}{\partial y} \frac{\partial y}{\partial r} \frac{\partial y}{\partial s} + \frac{\partial w}{\partial z} \frac{\partial z}{\partial r} \frac{\partial z}{\partial s}$$

$$\frac{\partial w}{\partial r} \frac{\partial r}{\partial x} + \frac{\partial w}{\partial r} \frac{\partial r}{\partial y} + \frac{\partial w}{\partial r} \frac{\partial r}{\partial z}$$