

Answer on Question #55792 – Math - Calculus

Question 1. Let $f(x,y)$ be a real single-valued function of two independent variables x and y , then the partial derivatives of $f(x,y)$ with respect to y is defined as

- (A) $\lim_{dx \rightarrow 0} \frac{f(x+dx,y) - f(x,y)}{dx}$
- (B) $\lim_{dy \rightarrow 0} \frac{f(x,y+dy) - f(x,y)}{dy}$
- (C) $\lim_{dx \rightarrow 0} \frac{f(x+dx,y) - f(y,x)}{dy}$
- (D) $\lim_{dx \rightarrow 0} \frac{f(x+dx,y+dy) - f(x,y)}{dx}$

Solution

The correct answer is “(B) $\lim_{dy \rightarrow 0} \frac{f(x,y+dy) - f(x,y)}{dy}$ ”.

I believe it should be “ $\lim_{dy \rightarrow 0}$ ” instead of “ $\lim_{dx \rightarrow 0}$ ” in (B). Otherwise, there is no correct answer.

Question 2. Let $f(x,y)$ be a real single-valued function of two independent variables x and y , then the partial derivatives of $f(x,y)$ with respect to x is defined as

- (A) $\lim_{dx \rightarrow 0} \frac{f(x+dx,y) - f(x,y)}{dx}$
- (B) $\lim_{dx \rightarrow 0} \frac{f(x+dx,y) - f(x,y)}{dy}$
- (C) $\lim_{dx \rightarrow 0} \frac{f(x+dx,y) - f(y,x)}{dx}$
- (D) $\lim_{dx \rightarrow 0} \frac{f(x+dy,y) - f(x,y)}{dx}$

Solution

The correct answer is “(A) $\lim_{dx \rightarrow 0} \frac{f(x+dx,y) - f(x,y)}{dx}$ ”.

Question 3. If $f(x,y) = 2x^3 + 3y^2$, find $f(-1,-2)$

Solution

$$f(-1,-2) = 2(-1)^3 + 3(-2)^2 = -2 + 12 = 10$$