

Partial Derivatives MCQ Questions

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Questions

- Q1. The partial derivatives of a function with respect to some variable t , are just like ordinary derivatives, except you keep any other variables constant (i.e. *replacing these variables with their constant values*).
- a. True
 - b. False
- Q2. Find the partial derivative of function $f(x, y) = 3 - x^2 - y^2$ with respect to y .
- a. $\frac{\partial f}{\partial y} = -2y$
 - b. $\frac{\partial f}{\partial y} = 3 - 2y$
 - c. $\frac{\partial f}{\partial y} = -2x$
 - d. $\frac{\partial f}{\partial y} = 3 - x^2$
- Q3. Find the second-order partial derivative f''_{xy} of function $f(x, y) = 6x^2 - 2xy$.
- a. $\frac{\partial^2 f}{\partial x \partial y} = 6x^2 - 2x$
 - b. $\frac{\partial^2 f}{\partial x \partial y} = -2$
 - c. $\frac{\partial^2 f}{\partial x \partial y} = 12$
 - d. $\frac{\partial^2 f}{\partial x \partial y} = 12x - 2y$
- Q4. Find the second-order partial derivative f''_{yx} of function $f(x, y) = -x^3y^2 + 3yx$ at the point $(1, 2)$.

a. $\frac{\partial^2 f}{\partial y \partial x} = 12$

b. $\frac{\partial^2 f}{\partial y \partial x} = -1$

c. $\frac{\partial^2 f}{\partial y \partial x} = 0$

d. $\frac{\partial^2 f}{\partial y \partial x} = -9$

Q5. Comment on the second-order partial derivative f''_{xy} and f''_{yx} of function $f(x, y) = -x^3y^2 + 3yx$.

a. They are same $\frac{\partial^2 f}{\partial x \partial y} = \frac{\partial^2 f}{\partial y \partial x}$.

b. They are different $\frac{\partial^2 f}{\partial x \partial y} \neq \frac{\partial^2 f}{\partial y \partial x}$.

Q6. If $y = u^3$, and $u = t^2 + 2$, then find $\frac{dy}{dt}$.

a. $\frac{dy}{dt} = 6t^3 + 12t$

b. $\frac{dy}{dt} = 6t^3$

c. $\frac{dy}{dt} = 12t$

d. $\frac{dy}{dt} = 3t^2 \cdot 2u$

Answer Key

Q1. True

Q2. $\frac{\partial f}{\partial y} = -2y$

Q3. $\frac{\partial^2 f}{\partial x \partial y} = -2$

Q4. $\frac{\partial^2 f}{\partial y \partial x} = -9$

Q5. They are same $\frac{\partial^2 f}{\partial x \partial y} = \frac{\partial^2 f}{\partial y \partial x}$

Q6. $\frac{dy}{dt} = 6t^3 + 12t$