

ASSIGNMENT

Assignments

1. If $u = x^2y + y^2z + z^2x$, prove that $\frac{\partial u}{\partial x} + \frac{\partial u}{\partial y} + \frac{\partial u}{\partial z} = (x + y + z)^2$.
2. For the production function $f(K, L) = 9K^{\frac{1}{3}}L^{\frac{2}{3}}$, find the marginal products of K and L (i.e. the partial derivatives of the function with respect to K and with respect to L).
3. Find all second order partial derivatives of $z = \frac{\sqrt{x+y}}{x^2\sqrt{1+y^2}}$.
4. Verify the Euler's theorem for $f(x, y) = \frac{x-y}{x+y}$.
5. Find all the stationary values of function $f(x, y) = xy + 27\left(\frac{1}{x} + \frac{1}{y}\right)$.
6. Examine the function $f(x, y) = 2x^4 + y^2 - x^2 - 2y$ for Maxima and Minima.
7. Find the extreme values of function $f(x, y) = 3x^2 + y^2 - x - 2y$ subject to condition $2x + y = 4$.