



Class: 2st

Subject: Mathematics

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H.W

- ① Find the values of $\frac{\partial f}{\partial x}$ and $\frac{\partial f}{\partial y}$ at the point (4, -5) if $f(x, y) = x^2 + 3xy + y - 1$
- ② Find $\partial f / \partial x$ and $\partial f / \partial y$ for $f(x, y) = (x^2 - 1)(y + 2)$
- ③ Find $\partial f / \partial x$ and $\partial f / \partial y$ for $f(x, y) = \frac{x}{x^2 + y^2}$
- ④ Find f_x , f_y and f_z for
 - a/ $f(x, y, z) = \ln(x + 2y + 3z)$
 - b/ $f(x, y, z) = e^{-(x^2 + y^2 + z^2)}$
- ⑤ Find all the second order partial derivatives of the $f(x, y) = \sin(xy)$
- ⑥ Find the value of df/dt at $t=0$ if $f(x, y) = x^2 + y^2$ and $x = \cos t + \sin t$, $y = \cos t - \sin t$.
- ⑦ Find the value of df/dt at $t=3$ if $f(x, y, z) = \ln(x^2 + y^2 + z^2)$ and $x = \cos t$, $y = \sin t$, $z = 4\sqrt{t}$
- ⑧ Find ∇f at the point (1, 1, 1) if $f(x, y, z) = x^2 + y^2 - 2z^2 + z \ln x$
- ⑨ Find the derivative of $f(x, y, z) = xy + yz + zx$ at $P_0(1, -1, 2)$ in the direction of $\vec{v} = 3\mathbf{i} + 6\mathbf{j} - 2\mathbf{k}$.
- ⑩ Find the local minima, local maxima and Saddle points of $f(x, y) = x^2 + 2xy$
- ⑪ Find the maximum values of $f(x, y) = 49 - x^2 - y^2$ on the line $x + 3y = 10$

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