

SNSCOLLEGEOFTECHNOLOGY



(An Autonomous Institution)

Coimbatore-641035.

UNIT 4-Functions of several variables

Maxima and Minima of functions of two variables

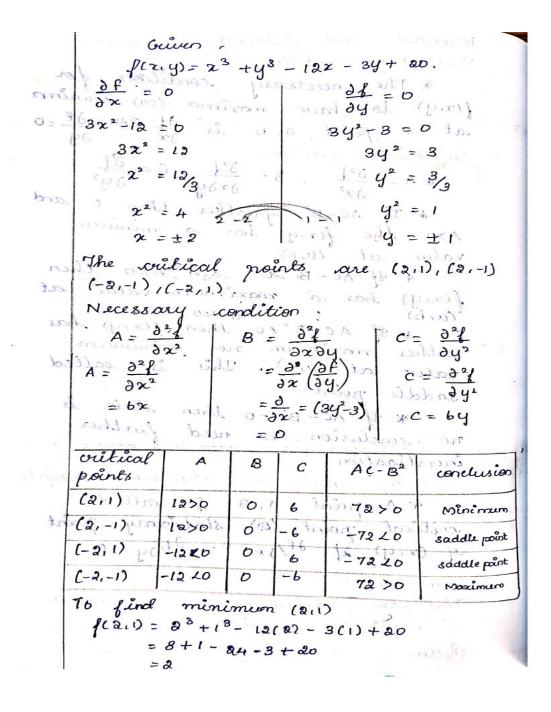
Maxima and Minima.
Necessary condition:
* The necessary condition for
(Tru) to the second man
at a point a b is of =0 . df =0
Sufficient condition:
at a point a, b is $\frac{\partial f}{\partial x} = 0$, $\frac{\partial f}{\partial y} = 0$ Sufficient condition: $A = \frac{\partial^2 f}{\partial x^2}$, $B = \frac{\partial^2 f}{\partial x \partial y}$, $C = \frac{\partial^2 f}{\partial y^2}$
dat dady dy ard
AC B ONIOTHER WILL
A>0 the f(x,y) has a 412120
A>0 the f(x,y) has a minium value at (0,6) A(-B ² >0 A(-B ²)) A(-B ² >0 A(-B ² >0 A(-B ² >0 A(-B ²)) A(-B ² >0 A(-B ² >0 A(-B ²)) A(-B ² >0 A(-B ² >0 A(-B ²)) A(-B ²)) A(-B ²) A(-B ²)) A(-B
I(x, y) has a maximum value at
(a,b) has a maximum value at
either maximum nor minimum value at (aib). This is called
reither maximum not minuted
resaddle point.
* of AC-Bi =0 then their is
no conclusion. We need further
investigation. 8 A milio
(x) Critical point (on) stationary points
(x) critical point (on) stationary points
critical point (0) stationary point
of (x,y) 2 3f/3x=0, 3f/3y=0.)
Example: 1:
Find the maximum and minimum
of 23+43-7122-34+20, 60 000
San: 06+8-118-1+8=
8 =



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To find maximum
$$(-2,-1)$$
.
$$f(-2,-1) = (-2)^{3} + (-1)^{3} - 12(-2) - 3(-1) + 20$$

$$= -8 - 1 + 24 + 3 + 20$$

$$= 38$$