

Course 2E1 2005-06 (SF Engineers & MSISS & MEMS)**S h e e t 7**

Due: in the tutorial sessions next Wednesday/Thursday

Exercise 1

Find all the local maxima, local minima, and saddle points of the functions:

(i) $f(x, y) = x^2 + 2x + y^2 - 6y - 3;$

(ii) $f(x, y) = x^2 - xy - 5y^2;$

(iii) $f(x, y) = x^2 + y^3 - 9y + 3;$

(iv) $f(x, y) = x^4 + y^4 - 4xy;$

(v) $f(x, y) = \frac{1}{\sqrt{1-x^2+y^2}};$

(vi) $f(x, y) = x^2 - \sin y.$