

2nd Derivative Test

GROUP MEMBERS:

1. _____
2. _____
3. _____
4. _____

Problem: Decide if a critical point is a local maximum, local minimum or saddle point.

Directions: Person 1 take this sheet and do problem 1. Explain to the group what you are doing. Then pass the sheet to person 2 who does the second problem and explains to the group. Then pass to the third person and so on.

Examine the function

$$f(x,y) = x^2 - 4x + y^2 - 6y + 13.$$

1) (Person 1) Calculate

$$f_x =$$

$$f_y =$$

2) (Everybody) Find the critical points of $f(x,y)$.

Critical points =

3) (Person 2) Calculate

$$f_{xx} =$$

$$f_{xy} =$$

4) (Person 3) Calculate

$$f_{yy} =$$

5) (Person 4) calculate $D =$ determinant of the matrix of partial derivatives.

$$D =$$

6) (The whole group) Classify the critical point as a local maximum, local minimum or saddle point.