

Lecture 21

Extrema of functions of several variables

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Mathematics 2 – Calculus of Functions of Several Variables
SS 2019

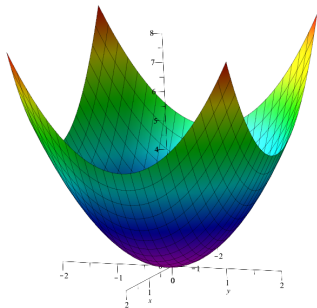
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Local extrema

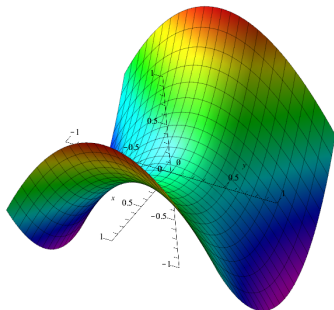
$$f(x, y) = x^2 + y^2$$



$(0, 0)$ is a point of local minimum.

Saddle point

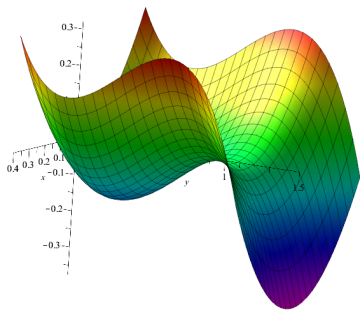
$$f(x, y) = x^2 - y^2$$



$(0, 0)$ is a saddle point.

Ex. 21.3

$$f(x, y) = 2x^2 - y(y - 1)^2$$



$(0, 1)$ is a saddle point.

$(0, \frac{1}{3})$ is a local minimum.

Exercise 21.1

$$f(x, y) = (x + y)e^{-x^2 - y^2}$$

