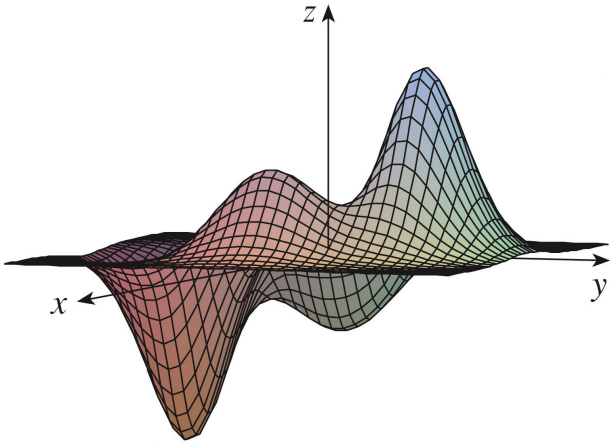
Lesson 20. Absolute Minima and Maxima

- (a, b) is an **absolute minimum** if $f(a, b) \leq f(x, y)$ for all (x, y) in the domain of f
- (a, b) is an **absolute maximum** if $f(a, b) \geq f(x, y)$ for all (x, y) in the domain of f
- Every absolute minimum is a local minimum
- However, a local minimum is not necessarily an absolute minimum!



- Same statements apply for absolute maxima and local maxima

Example 1. Find the shortest distance from the point $(2, 0, -3)$ to the plane $x + y + z = 1$.

Example 2. Find three positive numbers whose sum is 90 and whose product is a maximum.

Example 3. A rectangular box is to be made from 100 m^2 of cardboard. Find the maximum volume of such a box.