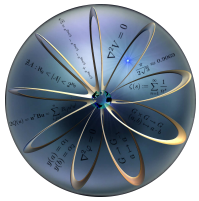

planetmath.org

Math for the people, by the people.

Morse function

Canonical name	MorseFunction
Date of creation	2013-03-22 13:53:15
Last modified on	2013-03-22 13:53:15
Owner	bwebste (988)
Last modified by	bwebste (988)
Numerical id	8
Author	bwebste (988)
Entry type	Definition
Classification	msc 58E05
Defines	non-degenerate critical point

Let M be a smooth manifold. A critical point of a map $u : M \to \mathbb{R}$ at $x \in M$ is called if the Hessian matrix H_u (in any local coordinate system) at x is non-degenerate.

A smooth function $u : M \to \mathbb{R}$ is called *Morse* if all its critical points are non-degenerate. Morse functions exist on any smooth manifold, and in fact form an open `http://planetmath.org/Dense`dense subset of smooth functions on M (this fact is often phrased "a generic smooth function is Morse").