

There are two ways of viewing Morse theory. The classical way is essentially just a proof that one can prove that a smooth manifold admits a cell decomposition by using a Morse function.

Definition 1. Let X be a compact manifold. A function

$$f : X \rightarrow \mathbb{R}$$

is Morse if $df \pitchfork 0_X$ (the intersection is transverse, see [transverse intersection/Definition 1.](#))

This is based on [schwarzMorseHomology1993].