Defn: (φ, U) is a *chart* or *coordinate neighborhood* if $\varphi : U \to U'$ is a homeomorphism, where U is open in M and U' is open in $\mathbf{R}^n$.

Defn: Two charts, (φ, U) and (ψ, V) are C^∞ *compatible* if the function $\varphi\psi^{-1} : \psi(U \cap V) \to \varphi(U \cap V)$ is a diffeomorphism.

Defn: A *(pre) atlas* or *differentiable or smooth structure* on M is a collection of charts on M satisfying the following two conditions:

i.) the domains of the charts form an open cover of M

ii.) Each pair of charts in the atlas is compatible.

Defn: An atlas is a (maximal or complete) atlas if it is maximal with respect to properties i) and ii).

A *differential (or smooth or C^∞) n-manifold* M is a topological n-manifold together with an atlas.

Theorem: A (pre) atlas can be uniquely enlarged to a maximal atlas.