0.1 Affine connections

If we have a tangent vector at one point of the manifold, we can map it to a tangent vector at a nearby point on the manifold.

We can use chain rule. so we can have coordinate maps where there is no overlap.

0.1.1 Smooth connections

0.1.2 Affine connection

We have a vector in a tangent space

We have a curve on the manifold from the start point

As we "roll" the tangent, there is a unique vector in each new tangent, determined by transition map

These are affine transformations

Given two points, what path? what transfomration? if curuved then different paths will given different transformation.