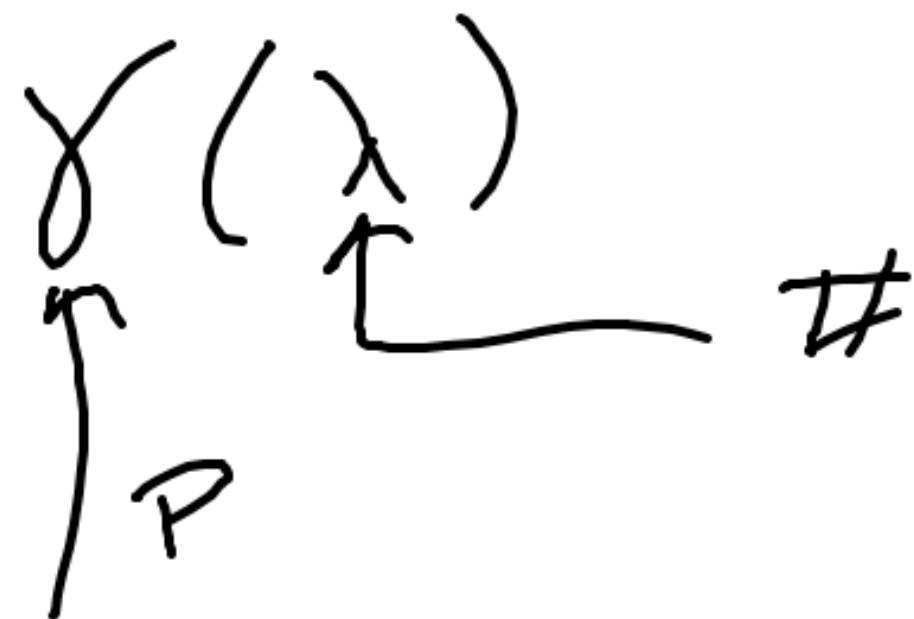




$f(p)$ functions.



$$\frac{d}{d\lambda} f(\gamma(\lambda)) = \frac{d}{d\lambda} W(\gamma(\lambda))$$

γ nice curves.

$$\frac{d}{d\lambda} \left(f(\gamma(\lambda)) \right)_{\gamma(A)} = \frac{d}{d\lambda} f(\tilde{\gamma}(\lambda)) \Big|_{\lambda=\lambda_0}$$

$\gamma(\lambda_0) = \tilde{\gamma}(\lambda_0)$

$$W_A V^A = \frac{d}{d\lambda} (f(\gamma(\lambda))) \quad \text{if } V^A = \frac{\partial}{\partial \lambda}$$

$$W_A = \frac{d}{d\lambda} f_A$$

Coords.

$$x^i \quad i \rightarrow 0 \dots N-1$$

$$x^i(p) = x^i(p_0) \quad \forall i$$

Then $p = p_0$

Curves. $x^i(\gamma(\lambda)) = x^i(\gamma(0)) + \lambda \frac{dx^i}{d\lambda}$

Assump: $\gamma(\lambda)$ is nice

λ axis

Tangent vector at p_0 is ∂_{y^i}