Local transformation rules

on a	section/object, globally	locally it looks like	transformation rule	connection, locally	derivative using the connection	connection transforms	derivative transform
manifold M with local charts (Φ_α, U_α)	smooth map $f : M \to \mathbb{R}$	on U_α $f_\alpha : U_\alpha \to$	on $U_\alpha \cap U_\beta$ $f_\alpha = f_\beta$ *"doesn't transform"*	$\nabla f = \mathrm{d}f$	$X^i \frac{\partial f}{\partial x_i}$		
$g_{\alpha\beta} := \mathfrak{D}(\Phi$	a tangent vector field $X : M \to T$	on U_α $X = X^i_\alpha \frac{\partial}{\partial x}$ where $X_\alpha : U_\alpha \to$	on $U_\alpha \cap U_\beta$ $g_{\alpha\beta}\,(X_\alpha) =$				
	a smooth map $f : M \to V$						
$\mathbb{R}$-**vector bundle** $E \to M$ of rank n with local trivializations on V_α transition maps $g_{\alpha\beta} : V_\alpha \cap V$	a smooth section $\phi : M \to E$	on V_α $\phi_\alpha : V_\alpha \to$	on $V_\alpha \cap V_\beta$ $g_{\alpha\beta}(\phi_\beta) =$ which is a matrix multiplication	on U_α $\nabla = \mathrm{d} + A$ where $A_\alpha \in \Omega^1(U$	$\nabla\phi_\alpha = \mathrm{d}\phi$	$A_\alpha = g^{-1}_{\beta\alpha}($	
$\mathbb{R}$-line bundle $L \to M$ with local trivializations on V_α transition maps $g_{\alpha\beta} : V_\alpha \cap V$	a smooth section $\phi : M \to L$	on V_α $\phi_\alpha : V_\alpha \to$	on $V_\alpha \cap V_\beta$ $g_{\alpha\beta}\,\phi_\beta = \phi$ which is *just* real numbers multiplication				
	a smooth map $f : M \to \mathbb{C}$		$f_\alpha = f_\beta$	$\nabla f = \mathrm{d}f$			
$\mathbb{C}$-line bundle with local trivializations on V_α transition maps $g_{\alpha\beta} : V_\alpha \cap V$			on $V_\alpha \cap V_\beta$ $g_{\alpha\beta}\,\phi_\beta = \phi$ which is *just* complex numbers multiplication	on U_α $\nabla = \mathrm{d} + A$			
a G-bundle $P \to M$ and a associated bundle $E \to M$	a smooth section $\phi : M \to E$			on U_α $\nabla = \mathrm{d} + A$ where $A_\alpha \in \Omega^1(U$			

Current note has 0 direct children and 0 total descendants.

- structures based on sets
  - manifolds
    - smooth $\mathbb{R}$-manifold
      - Local transformation rules

And it has 19 siblings.

- structures based on sets
  - manifolds
    - smooth $\mathbb{R}$-manifold

- Smooth Lie group action on a smooth manifold
- Borel measures on a smooth manifold
- G-bundles over smooth manifolds $G \curvearrowright P \to X$
- Vector bundle on smooth manifolds
- Curves in smooth manifolds
- Density on smooth manifolds
- Functions between smooth manifolds
- Functions from smooth manifolds to $\mathbb{R}$
- Flows on a smooth manifold
- Locally $G \curvearrowright X$-manifolds
- Smooth singular homology of a smooth manifold
- Isomorphisms and automorphisms of smooth manifolds
- Lagrangian flows
- Local transformation rules
- Moduli space of Riemannian metrics on a smooth manifold
- Moduli space of quotients
- Quotient manifolds
- Submanifolds of smooth manifolds
- Tangents on a smooth manifold