$_p :=\{$
$p\}$
$_p$
$_p -_p \subseteq^{\times}_p$
A
$\cup_j$
$_j$
A
$A- \subseteq$
$A^{\times} A- \subseteq$
$A-$
$\cup_{jj} \supseteq$
$\cup_{jj}$
$_p -_p$
$(f, U)_p$
(f, U)
$(f, U)_p \in_p$
$-_p f(p) \neq$
0
f
U
$V \subseteq$
U
$f(q) \neq$
$0, \forall q \in$
$V (1/f, V)$
$\frac{p}{2} \cong$
$_p$
$T^*_p X$
$T^*_p X$
X
p

$$(f, V)_p +^2_p \longmapsto df_p = \sum_i \left. \frac{\partial f \circ \varphi^{-1}}{\partial x^i} \right|_p (dx^i)_p,$$

$\delta_p \in$
$T_p X \cong$
$Der_p(C^1(X))$
p
$df_p(\delta_p) =$
$\delta_p f \in$
$h \in^2_p$
$dh_p =$
0
$(g, U) \sim$
(f, V)
$p \in$
$W \subseteq$
$U \cap$
V
$f|_W -$
$g|_W =$
0
$(df_p -$
$dg_p)(\delta) =$
$\delta_p(f) -$
$\delta_p(g)$
$\phi(x) =$
$1, \forall x \in$
$W' \ni$
p
$\phi(x) =$
$0, \forall x \in$
$U \cap$
$V -$
W
$0 =$
$\delta_p(f|_{W'} -$
$g|_{W'}) =$
$\delta_p((f -$
$g)\phi|_{W'}) =$
$(f(p) -$
$g(p))\delta_p(\phi) +$
$\delta_p(f -$
$g)\phi(p)\delta_p(f -$
$g) =$
0
$(dx^j)_p$
p
(V, φ)
$\varphi(p) =$
$0 \in^n$
x_i
i
ϕ

X
$_{U,U}"](V)[l,"res_{V,U}"'](W)[l,"res_{W,V}"'][ll,"res_{W,V}",bendleft]$
B
B
$\{U_i\}_{i\in I}$
$U_n :=$
$\{z \in :$
$n-$
$1 <$
$Rez <$
$n+$
$1\}$
$f_n(z) :=$
z
$h^2(z)$
$h(z)$
U
$\{2 <$
$|z| <$
$3\}$
U
$D_n :=$
$\{|z-$
$5/2e^{in2\pi/10}| <$
$1\}$
$\sqrt{z}$
$\sqrt{z}$
U
$(\cup_{i\in I}U_i)$
I
I
$i \leq$
j
U_iU_j
$(\cup_{i\in I}U_i)$
$(\cup_{i\in I}U_i)(U_k)$
$_{\cup_i U_i, U_k}$

$(\cup_{i\in I}U_i) =_{i\in I} (U_i)$

^{n}
$_{U,U_i} f_1 =_{U,U_i}$
$f_2, \forall U_i$
$f_1(p) =$
$f_2(p)\forall p \in$
$U_i, \forall U_i$
f_1
f_2
U
$\{U_i\}_{i\in I}$
$\{\rho_i\}_{i\in I}$
ρ_i
$\{f_i \in$
$C^k(M)\}$
$f =$
$\sum_i \rho_i(x)f_i(x) \in$
$C^k(M)$
f_i
$C^k(M)$
(a)
$C(X)$
X
$f_1(p) =$
$f_2(p)$
U
$f(p) =$
$f_i(p)$
$f_i \in$
$C(U_i)$
$p \in$
U_i
f
U
$f(p) \in$
V
$f(p) =$
$f_i(p)$
f_i
$p \in$
$W \subset$
U_i
$f_i(W) \subset$
V
W
U
$_{U,W} f =_{U_s,W}$
$\circ_{U,U_i} f =_{U_i,W}$

??

$0(U)_X(U)(U)0$

$(U)_X(U)$
$_X(U)(U)$

$g \in$
(U)
$\frac{1}{2\pi i}\log g =$
$h \in_X$
(U)
$\exp(2\pi h) =$
g

$_X(U)$

$\ker(f \mapsto$
$\exp(2\pi i f)) =$
$((U)_X(U))$
(U)
$p \in$
$\ker(f \mapsto$
$\exp(2\pi i f))$
$\exp(2\pi i p) =$
1
U
0
(U)

$$(U) \prod_{p\in U} {}_p$$

$f_1, f_2 \in$
(U)
p
U_p, V_p
$(f_1|_{U_P}; U_p) \sim$
$(f_2|_{V_p}; V_p)$
W_p
$f_1|_{W_p} =$
$f_2|_{W_p}$
W_p
$\{W_p\}_{p\in U}$
U
f_1, f_2
W_p
$f_1 =$
f_2
(s)
$p \notin$
(s)
$s_p =$
$0 \in_p$
$[(s|_V; V)] =$
$[(0; U)]$
W
p
$s|_W =$
0
$W \in$
$X-$
(s)
(s)
U
U
$\prod_{p\in U} s_p$
$\{U_i\}_{i\in I}$
$f_i \in$
(U_i)
$(f_i)_p =$
s_p
$p \in$
U_i
$f_i|_{U_i\cap U_j} =$
$f_j|_{U_i\cap U_j}$
$f \in$
(U)
$f|_p =$
s_p
ϕ_1
ϕ_2
presheaf
sheaf
$\phi_1 =$
ϕ_2
$\phi(U)"](U)[d, hook]$
$\prod_{p\in U} p[r, "\prod \phi_p"'] \prod_{p\in U} p$