V is called smooth or nonsingular if $V = V^*$, i.e., if V is a submanifold of M.

P21. Proposition. An analytic variety V is irreducible $\Leftrightarrow$ V^* is connected.

Fact: V^* is disconnected and let $\{V_i^*\}$ denote the connected components of V^*. $\Rightarrow$ $\overline{V_i^*}$ is an analytic variety.
$\Rightarrow$ By Proposition, since $\overline{V_i^*}$ is connected, $\overline{V_i^*}$ is irreducible.
$\Rightarrow$ $V^* = \bigcup \overline{V_i^*}$))

Now we define

Def: A divisor D on M is a locally finite formal linear combination.

$$D = \sum a_i V_i$$

of irreducible analytic hypersurfaces of M.

"Locally finite" here means that for any $p \in M$, there exists a nbd of p meeting only a finite # of the V_i's appearing in D; of course, if M is compact, this just means the sum is finite. The set of divisors in M is naturally an additive group, denoted $\mathrm{Div}(M)$.

Γ For each $p \in M$, $\exists$ U_p s.t U_p meets only a finite # of the V_i's. $\Rightarrow$ $\{U_p\}$ is an open covering of M
$\Rightarrow$ $\exists$ a finite # of $\{U_i\}_{i=1}^n$ covering M since M is compact.
$\Rightarrow$ For each i, $\exists$ a finite # of V_i's s.t V_i meets U_i.
$\Rightarrow$ Count all these. $\Rightarrow$ Finite.
Formally, $\mathrm{Div}(M)$ is an addive group.))