2) *The vector space V/I is an n-Lie algebra relative to the product*

$$[\pi v_1, \cdots, \pi v_n] := \pi[v_1, \cdots, v_n],$$

where $\pi : V \to V/I$ denotes the canonical map.

3) *Let $\psi : V \to V'$ be an n-Lie algebra homomorphism.*

   (a) *If I' is an ideal of V', then $\psi^{-1}I$ is an ideal of V, in particular, $Ker\psi$ is an ideal of V. Moreover ψ induces an isomorphism $\tilde{\psi} : V/Ker\psi \to Im\psi$. If I is any ideal of V included in $Ker\psi$, then there exists a unique homomorphism $\phi : V/I \to V'$ such that $\psi = \phi\pi$.*

   (b) *If ψ is in addition surjective, then the image of any ideal of V under ψ is an ideal of V'.*

4) *If $J \subseteq I$, then I/J is an ideal of V/J and $(V/J)/(I/J)$ is naturally isomorphic to V/I.*

5) $(I + J)/J \cong I/(I \cap J)$.

Definition: *Let V be an n-Lie algebra over K. We call an endomorphism D of V a derivation if for all $v_i \in V$, $i \in \underline{n}$:*

$$D[v_1, \cdots, v_n] = \sum_{i=1}^{n}[v_1, \cdots, v_{i-1}, Dv_i, v_{i+1}, \cdots, v_n]. \tag{1.9}$$

In consequence of identity (1.2) each left multiplication is a derivation. We refer to an endomorphism D of V as an inner derivation if it may be written as a sum of some left multiplications. We denote by $Der(V)$ ($Inder(V)$) the set of all (inner) derivations of V. One can verify

Proposition 1.1.2: *Relative to the Lie bracket $Der(V)$ is a Lie algebra and $Inder(V)$ is an ideal of $Der(V)$.*

Let V be an arbitrary n-Lie algebra and let U_i, $i \in \underline{n-1}$, be subspaces of V. We denote by $\mathrm{ad}(U_1, \cdots, U_{n-1})$ the subspace of $Inder(V)$ spanned by the left multiplications $\mathrm{ad}(u_1, \cdots, u_{n-1})$, $u_i \in U_i$. If U_i, $i \in \underline{n-1}$, are ideals of V, then $\mathrm{ad}(U_1, \cdots, U_{n-1})$ is an ideal of $Inder(V)$.

Let V be an arbitrary n-Lie algebra. Then the Lie algebras $Der(V)$ and $Inder(V)$ operate in a natural way on V, so we have a representation of them on V, or equivalently, V is a $Der(V)$- and an $Inder(V)$-module. If I is an ideal of V, that is, $[I, V, \cdots, V] \subseteq I$, then I is an $Inder(V)$-submodule of V. Conversely if