$I + J = I$ or $J \subseteq I$ due to the maximality of I. Hence we have proved the existence of a unique maximal k-solvable ideal of V.

Definition: *Let V be an n-Lie algebra, $k \in \underline{n}$.*

1) *The maximal k-solvable ideal of V is called the k-radical of V and will be denoted by $Rad_k(V)$.*

2) *If $Rad_k(V) = \{0\}$, then we call V is k-semisimple.*

Remark 2.1: It is proved by Kasymov [10] that $Rad_k(V)$ is invariant under all derivations of V, that is, $D(v) \in Rad_k(V)$ for any $D \in Der(V)$ and any $v \in Rad_k(V)$.

Recall that V is assumed to be finite dimensional. Thus the upper central series of V will be stationary, i.e. there exists an $s \in \mathbb{N}$ such that $C_s(V) = C_{s+1}(V)$. Assume that s is minimal. Since $C_s(V)$ is 1-solvable, $C_s(V) \subseteq Rad_1(V)$. On the other hand, $Rad_1(V)$ is included in some $C_{s'}(V)$ for $s' \leq s$. Thus $Rad_1(V) \subseteq C_s(V)$. Together with the foregoing inclusion we get $Rad_1(V) = C_s(V)$, in other words, the $Rad_1(V)$ is the greatest element in the upper central series. If V is 1-semisimple, then $C_s(V) = \{0\}$ forces $C(V) = \{0\}$; conversely, if $C(V) = \{0\}$, then $C_s(V) = \{0\}$ and V is 1-semisimple. Therefore an n-Lie algebra V is 1-semisimple if and only if $C(V) = \{0\}$.

Since a k-solvable ideal of an n-Lie algebra is also a k'-solvable ideal of the given n-Lie algebra for $k \leq k'$, we have

Proposition 2.3: *Let k, $k' \in \mathbb{N}$, $1 \leq k \leq k' \leq n$. If an n-Lie algebra V is k'-semisimple, then V is also k-semisimple. In particular, if V is n-semisimple, then V is k-semisimple for all $1 \leq k \leq n$.*

Example 2.2: For $k \geq 3$ the n-Lie algebra in Example 2.1 is $(k-1)$-semisimple but k-solvable. A simple n-Lie algebra is k-semisimple for all $k \in \underline{n}$.

Theorem 2.4: *Let V be an n-Lie algebra, then $V/Rad_k(V)$ is k-semisimple.*

Proof: Denote by $\pi : V \longrightarrow V/Rad_k(V)$ the canonical homomorphism. If I is the k-radical of $V/Rad_k(V)$, then we derive from $\pi^{-1}(I) \supseteq Rad_k(V)$ and 3) in Proposition 2.2 that $\pi^{-1}(I)$ is a k-solvable ideal of V, therefore $\pi^{-1}(I) \subseteq Rad_k(V)$, this implies $I = \{0\}$. □

In what follows we shall mean n-solvability by solvability and correspondingly n-semisimple by semisimple. Instead of $Rad_n(V)$ we shall write $Rad(V)$. In the fol-