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Definition 2. Let L be a lattice and $c \in L$. If for each $a, b \in L$ the element c fulfils the identity

$$(a \vee c) \wedge (b \vee c) = (a \wedge b) \vee c,$$

c is called a *semi-distributive element*.

Theorem 3. Let L be a modular lattice and $j \in L$ a semi-distributive element. Let J be a principal ideal generated by j and T_j the relation induced by J . Then T_j is a congruence relation on L (with the kernel J).

Proof. By Theorem 2 in [3], T_j is a compatible relation for the principal ideal J generated by j (it means $J = \{x \in L; x \leq j\}$). By Theorem 1, T_j is a congruence relation on L . Clearly, J is the kernel of this congruence.

References

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