01:640:350H - Notes

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Contents

1 Vector Space Axioms

1. Commutativity of addition: $u + v = v + u$
2. Associativity of addition: $(u + v) + w = u + (v + w)$
3. Additive identity: There exists a vector 0 such that $v + 0 = v$ for all v
4. Additive inverse: For every vector v, there exists a vector $-v$ such that $v + (-v) = 0$
5. Identity element of scalar multiplication: $1v = v$
6. Associativity of scalar multiplication: $a(bv) = (ab)v$
7. Distributivity of scalar multiplication with respect to vector addition: $a(u+v) = au+av$
8. Distributivity of scalar multiplication with respect to scalar addition: $(a+b)v = av+bv$

Know how to prove 2.11 and 2.14