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

10/28

Last two pages of 13: even for 11 a,b last 2 problems in 8th week are bout direct sums on greater than 2 subspaces
read last pages of upcoming week hw
Use direct sums to understand eigenspaces
talk through 16 notes, and part of 17.
Section 5.2 . Look in 17 for non-diagonaizanlability
look at examples of 5.1

Exam 2 state and prove CH theorem
State and prove Replacement Theorem