

- Class Photo at 1:55!
- **TA Consultation Hours:** Monday 6PM-8PM and Thursdays 11AM-1PM at Bahen 6283.

Math 240 Algebra I, Tue Sep 26 2006, hours 7-8.

on board

- $a, b, c \in F$
 $x, y, z \in V$
- VS1 $x+y \neq y+x$
 - VS2 ASSOC
 - VS3 $x+0=0$
 - VS4 $\forall x \exists y \ x+y=0$
 - VS5 $1x=x$
 - VS6 $a(bx)=(ab)x$
 - VS7 $a(x+y)$
 - VS8 $(a+b)x$

Examples:

1. F^n
2. $M_{m \times n}(F)$
3. $\mathbb{C}/\mathbb{R}, \mathbb{R}/\mathbb{Q}$
4. $\mathcal{P}(S, F)$

one further example: Polynomials $P_n(F)$

Thm cancellation law Thm 0 is unique

Thm negatives are unique Thm $0x=0$
 $(-a)x = -(ax) = a(-x)$
 $a \cdot 0 = 0.$

Def $W \subset V$ a subspace if it is a v.s. with the ops it inherits from V .

Thm W is a subspace iff it is "closed under addition & multiplication by scalars";
 i.e., if

expected line

Example 1. $\{A \in M_{n \times n}(F) : A^t = A\}$

2. $\{A \in M_{n \times n}(F) : \text{tr } A = 0\}$

optimistic line

Thm The intersection of two subspaces is a subspace.

Example, The union isn't necessarily a subspace.