

**Homework 1 - Math 546H, Frank Thorne (thornef@mailbox.sc.edu)**

**Due Tuesday, September 2**

- (1) Saracino, Chapter 0: 0.7, and refer to the beginning of p. 6.

Don't turn in any of the other problems, but you should be able to do any of them.

- (2) Saracino, Chapter 1: Turn in 1.3 (f)-(j), 1.4, 1.5, 1.6, 1.8, 1.9, 1.10, and know how to do the rest.

If it is "obvious" that a binary operation is commutative or associative, you don't need to justify it. But if a binary operation isn't commutative or associative, explain why.

- (3) Saracino, Chapter 2: 2.1, 2.3, 2.4(a), 2.5, 2.8, 2.9-2.11. Know how to do the rest of 2.1-2.12. Look at 2.13-2.14, and think about how to write out proofs, but they are somewhat tedious to write out in full detail.

- (4) (**Bonus**) Give a highbrow, conceptual proof that matrix multiplication is associative. (Hint: what does it 'mean'?)