

# MATH 307

## Individual Homework 8

Instructions: Read textbook pages 37 to 38 and 43 to 45 before working on the homework problems. Show all steps to get full credits.

1. Prove that  $\|x\|_1 = \sum_{i=1}^n |x_i|$  indeed defines a norm for  $x \in \mathbb{C}^n$ .

2. Prove that 1 and  $\infty$  norms in  $\mathbb{C}^n$  are equivalent in the sense that  $\|x\|_\infty \leq \|x\|_1 \leq n\|x\|_\infty$  for all  $x \in \mathbb{C}^n$ .