Name: Hongda Li Class: CSE 546 HW2B

B.1

Objective: Given the definition for the L2, L1 and the Infinity norm of real vector, show that $\|x\|_\infty \leq \|x\|_2 \leq \|x\|_1$.
First we are going to show that $\|x\|_2^2 \leq \|x\|_1^2$, starting from the definition of the norms we have:

$$\|x\|_1^2 = \left(\sum_{i=1}^{n} x_i^2\right)^2 \tag{B.1.1}$$