MAT 1060H1F Assignment 5

Prof. McCann

Due: Thursday Nov. 30

To be handed in: Evans # 5.1, 5.4, 5.6, 5.7, 5.8,

1. Show all norms on \mathbb{R}^n are equivalent: i.e., given two norms $\|\cdot\|_1$ and $\|\cdot\|_2$, show there exist constants c, C > 0 such that all $x \in \mathbb{R}^n$ satisfy

 $||x||_1 \le c ||x||_2 \le C ||x||_1.$

BONUS (for fun; not to be graded): Find the minimum value of C which can be always be used in the above inequality, independently of the choice of norms on \mathbb{R}^n .

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