MMAT 5010 Linear Analysis (2023-24): Homework 8
Deadline: 30 Mar 2024

Important Notice:

♣ The answer paper must be submitted before the deadline.
♠ The answer paper MUST BE sent to the CU Blackboard. Please refer to the course web for details.

1. Let φ_k be the k-th coordinate functional corresponding to the natural basis of ℓ_1, that is $\varphi_k(x) := x(k)$ for $x \in \ell_1$ and $k = 1, 2....$ Show that $\varphi_k \in \ell_1^*$ and find $\|\varphi_k\|$.

2. Let X, Y be the non-zero normed spaces. Then for any non-zero element $x \in X$, there is a bounded linear map $T : X \to Y$ such that $Tx \neq 0$.

$***$ **End** $***$