1

a $\|x\|_1 = \sum_{i=1}^{n} |x_i| = |x_1| + |x_2| + \cdots + |x_n| \geq \emptyset \therefore$

$\|x\|_1 = \sum_{i=1}^{n} |x_i| = |x_1| + |x_2| + \cdots + |x_n| = \emptyset$

THEN IT MUST BE $x = [x_1 \; x_2 \cdots x_n]^T = \emptyset$

SINCE NO VALUES CAN BE SUBTRACTED — ALL x_i OF $x = \emptyset$, & $x = \emptyset$

b $\|\lambda \cdot x\|_1 = \sum_{i=1}^{n} |\lambda x_i| = |\lambda \cdot x_1| + |\lambda \cdot x_2| + \cdots + |\lambda \cdot x_n|$

$= |\lambda| \left(|x_1| + |x_2| + \cdots |x_n| \right) \therefore$

c $\|x + y\| = \sum_{i=1}^{n} |x_i + y_i| = |x_1 + y_1| + |x_2 + y_2| + \cdots + |x_n + y_n|$

$\leq (|x_1| + |y_1|) + \cdots + (|x_n| + |y_n|)$

$= \sum_{i=1}^{n} |x_i| + \sum_{i=1}^{n} |y_i| = \|x\|_1 + \|y\|_1$

$\therefore$