1 Point Set Topology

Let $x = (x_1, x_2, \cdots, x_n)$, $y = (y_1, y_2, \cdots, y_n)$ be 2 n-tuple in $\mathbb{R}^n$, where $n \geq 1$.

1. $x = y \leftrightarrow x_j = y_j \ \forall j = 1, \cdots, n$

2. $x + y = (x_1 + y_1, x_2 + y_2, \cdots, x_n + y_n)$

3. $ax = (ax_1, ax_2, \cdots, ax_n), \ a \in \mathbb{R}$

4. $x - y = x + (-1) \cdot y$

5. $0 = (0, 0, \cdots, 0), \ 0 + x = x + 0 = x$