1. Prove that $\mathbb{R}^2$ with the taxicab metric is a metric space.

2. Suppose $M_1 = (X, d_1)$ is a metric space. Let $M_2 = (X, d_2)$ be the metric space where $d_2 : X \times X \to [0, \infty)$ is defined by: $d_2(x, y) = 3d_1(x, y)$. Prove $M_2$ is a metric space.