
Do problems 1.2 and 1.3 from Prasolov's book, and the following problems:

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 $d_2 : X \times X \rightarrow [0, \infty)$ is defined by: $d_2(x, y) = 3d_1(x, y)$. Prove M_2 is a metric space.