Exercises

9.101 [0VR] Let be given a metric space (X,d) and its subset $C \subseteq X$ that is *totally bounded*, as defined in [0V3]: show that C is bounded, i.e. for every $x_0 \in C$ we have

$$\sup_{x \in C} d(x_0, x) < \infty \quad ,$$

or equivalently, for every $x_0 \in C$ there exists $r > 0$ such that $C \subseteq B(x_0, r)$.

The opposite implication does not hold, as shown in [0VT]