Exercises

9.129 [OWY] Let $\varphi : [0,\infty) \to [0,\infty)$ be a function that is continuous in zero, monotonically weakly increasing and with $\varphi(x) = 0 \iff x = 0$. Show that $\tilde{d} = \varphi \circ d$ is still an ultrametric. Show that spaces (X,d) $(X,\tilde{d})$ have the same topology.

Compare with the exercise [ON1], notice that we do not require φ to be subadditive.