Name: _____   Score (Out of 6 points):

1. (3 points) Let (X, d_X) and (Y, d_Y) be metric spaces, and let $f : X \to Y$ be a continuous map. Prove that if $S \subseteq X$ is sequentially compact, then $f(S) \subseteq Y$ is sequentially compact.

2. (3 points) Let (X, d_X) and (Y, d_Y) be metric spaces, and let $f : X \to Y$ be a continuous map. Either prove the following statement, or construct (with justification) a counterexample: If $B \subseteq X$ is a bounded subset, then its image $f(B) \subseteq Y$ is bounded.