Combinatorial Geometry, Learning and Algorithms **Caltech CS101.1 (units 3-0-6), Winter 2009.**
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Problem set 1 **Out Wednesday January 7. Due Wednesday January 14.**

Oral:

1. 1.2.3
2. 1.2.4. (Note: the end of part (b) should read "$f(\text{conv } (X))$".)
3. Say that a map $f : \mathbb{R}^d \to \mathbb{R}^{d'}$ is *compact-preserving* if the image of every compact set is compact. In class we mentioned that every continuous map is compact-preserving. Give an example of a map that is compact-preserving but not continuous.

Written:

1. 1.2.5
2. 1.2.7
3. 1.2.8
4. Show that for every set $S \subseteq \mathbb{R}^d$, conv cl $S \subseteq$ cl conv S. Give an example of a set S such that the containment is strict. [2 pts]