Combinatorial Geometry, Learning and Algorithms **Caltech CS101.1 (units 3-0-6), Winter 2009.**
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Problem set 3 **Out Monday February 2.**

Oral: Due Wednesday February 11.

1. 2.1.4ab
2. 3.1.1
3. 8.3.6

Written: Due Wednesday February 18.

1. 2.1.2 (Erratum: Lines 3 and 4 should read $s_1, \dots, s_{k+1} \in S$ ...and... $1 \le i, j \le k+1$.)
2. 2.1.5
3. 2.2.4
4. 2.3.1
5. 3.1.4
6. 8.3.2
7. (Bonus question.) Is there a *Colorful Steinitz Theorem?* I.e., given $2d$ finite sets $M_1, \dots, M_{2d} \subseteq \mathbb{R}^d$ and a point z such that for some $r > 0$, $B(z, r) \subseteq \bigcap(\text{conv}\, M_i)$, are there necessarily points $m_i \in M_i$ such that for some $r' > 0$, $B(z, r') \subseteq \text{conv}\,\{m_i\}$? (I suppose the answer should be "yes," but I don't know.)

   (Postscript: the original version of the problem was buggy. Thanks to Eui Woong Lee for the correction.)