Massachusetts Institute of Technology
18.433: Combinatorial Optimization
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Handout 9
March 8th, 2007

Problem set 3

This problem set is due in class on Tuesday March 20th, 2007.
The following 4 problems are from the lecture notes on polyhedral theory (see website).

1. Page 5, exercise 3.
2. Page 9, exercise 8.
3. Page 9, exercise 10. (A typo in the statement was corrected on 3/8/07.)
4. Page 12, exercise 12.
5. Consider the set $X = \{(\sigma(1), \sigma(2), \cdots, \sigma(n)) : \sigma \text{ is a permutation of } \{1, 2 \cdots, n\}\}$. As discussed in class (where we argued that $\dim(conv(X)) \leq n - 1$), show that $\dim(conv(X)) = n - 1$ by exhibiting n affinely independent permutations σ (and prove that they are affinely independent).