

## CS 254 HW2

### Grading

- Due 2014-01-23 @ 2pm. (Right before class).
- Please send all submissions (both L<sup>A</sup>T<sub>E</sub>Xed and handwritten) to [cs254-win1314-hw@lists.stanford.edu](mailto:cs254-win1314-hw@lists.stanford.edu)

### Problem 1

Let  $\text{size}(f)$  be the size (in number of gates) of the smallest circuit that computes  $f$ .

Prove: for all sufficiently large  $n$ , there exists  $f : \{0, 1\}^n$  such that  $n^3 \leq \text{size}(f) \leq n^3 + 10n$ .