# COS 522 Complexity — Homework 2.

Boaz Barak

Total of 150 points

**Exercise 1** (20 points)**.** Do Exercise 21.11 (random graph is expander).

**Exercise 2** (30 points)**.** Do Exercise 21.12 (two-sided error reduction).

**Exercise 3** (20 points)**.** Do Exercise 21.14 (expander mixing lemma).

**Exercise 4** (30 points)**.** Do Exercise 21.15 (vertex expansion)

**Exercise 5** (20 points)**.** Do Exercise 21.22 (tensor product)

**Exercise 6** (30 points)**.** Do Exercise 21.24 (combinatorial analysis of replacement product)