

Name (Last, First): \_\_\_\_\_

Student ID: \_\_\_\_\_

Dror Bar-Natan: Classes: 2015-16: MAT 475 Problem Solving Seminar:

<http://drorbn.net/16-475>

**Quiz 1** on January 14, 2016: “Search for a Pattern”. You have 25 minutes to solve one of the two problems below. Please write on both sides of the page. **Good Luck!**

**Problem 1.** (Larson’s 1.1.8; my estimate: medium) Prove that a list can be made of all the subsets of a finite set in such a way that (i) the empty set is first in the list, (ii) each subset occurs exactly once, and (iii) each subset in the list is obtained from the preceding one either by adding one element or by removing one element.

**Problem 2** (Larson’s 1.1.9; my estimate: easy). Determine the number of odd coefficients in the expansion of  $(x + y)^{1000}$ .