COMPLEXITY: Exercise No. 4
due next week

1. (Test 98)Is the following problem in **NL**?
   Given an undirected graph G, vertices x, y from G, and a positive integer K, does the shortest path from x to y is of length (exactly) K?

2. True, false or open? explain: $\mathbf{SPACE}(n^3) \subseteq \mathbf{NSPACE}(n)$.

3. Which of the following classes are closed under LOGSPACE reductions: **P**, **NP**, **coNP**, **PSPACE**, $\mathbf{SPACE}(n)$? (a class **C** is closed under reductions if $L \prec L'$ and $L' \in \mathbf{C}$ implies $L \in \mathbf{C}$)