

Exercise 7

Task 1. We proved (Slide 116) that VC problem is **NP**-complete by showing that $3\text{-SAT} \leq_m^{\log} \text{VC}$. Prove that VC problem is **NP**-complete showing that $\text{CLIQUE} \leq \text{VC}$ (See Exercise 6, Task 3).

Task 2. Show that we can reduce CIRCUI T VALUE to MONOTONE CIRCUIT VALUE in logarithmic space.

Hint: It is possible to assign labels to gates in an instance of MONOTONE CIRCUI T VALUE that corresponds to an instance of CIRCUI T VALUE.

Task 3. There exists a problem in **P**-Complete such that fits in $o(\log \log(n))$ space. Prove or disprove the statement.