

1. A clique in a graph $G = (V, E)$ is a set $C \subseteq V$ such that $\forall u \neq v \in C, \{u, v\} \in E$. Show that the following language CLIQUE is in **NP**:

$$\text{CLIQUE} = \{\langle G, k \rangle \mid G \text{ has a clique of size at least } k\}$$

Assume that graphs are represented by their adjacency matrices.

2. Show that the following language is in **NP**:

$$L = \{\langle M, w, 1^n \rangle \mid M \text{ is an NTM, } M \text{ has an accepting computation of length } \leq n \text{ on input } w\}$$