A reduction is poly-time efficient if it runs in polynomial time.

We denote as \( L \leq_p L' \) (Karp, many-one reduction)

Suppose \( L \leq_p L' \).

(R) None of these.
(G) \( L \in P \), \( L' \in P \).
(A) \( L \in P \), \( L' \in P \).
(G) \( L \in P \), \( L' \in P \).

Suppose deciding \( L \) efficiently is a long-standing open problem. I prove \( L \leq_p L' \). This

(R) I should give up on solving \( L \).
(G) I should still try to work on \( L' \).
(A) This is an indication that \( L \) is hard to solve

Is \( L \leq_p L' \) for all \( L \in P \) and non-trivial \( L' \)?

Theorem: Def. \( L \) is NP-complete if:

1. \( L \in \overline{P} \)
2. \( \forall M \in \overline{P}, M \leq_p L \)

Suppose I should some NP-complete problem is not in \( P \).

(R) All NP-complete problems are not in \( P \).
(G) All NP problems are not in \( P \).
(A) No implication about other NP problem.