VERTEX-COVER $\leq_p$ CLIQUE

Correctness proof: G has vertex-cover of size k => G' has clique of size |V| - k

Suppose G has vertex-cover V' belongs to V with V' = k

- ⇨ For all a, b belongs to V, if (a, b) belongs to E', then at least one of a, b belongs to V'
- ⇨ For all a, b belongs to V, and both a, b don't belongs to V', then (a, b) don't belongs to E'; that is (a, b) belongs to E
- ⇨ V – V' is a clique and its size is |V| - k

Correctness proof: G has clique of size |V| - k => G' has vertex-cover of size k

Suppose G has a clique V' belongs to V with V' = |V| - k

- ⇨ For all (a, b) belongs to E', then at least one of a, b doesn't belongs to V'
- ⇨ At least one of a, b belongs to V – V'
- ⇨ Edge (a, b) is covered by V – V'
- ⇨ V – V' forms a vertex cover G', and V – V' = k