(1) Let $\tilde{X}$ and $\tilde{Y}$ be simply connected covering spaces of path connected, locally path connected spaces X and Y. If X is homotopy equivalent to Y show $\tilde{X}$ is homotopy equivalent to $\tilde{Y}$.
(2) Let X be a path connected, locally path connected space with finite fundamental group. Show every map $X \to S^1$ is null homotopic.