1. [10 Points] **Professor Lai and \( NP! \)**

   (a) Professor I. Lai claims that if \( P_1 \) and \( P_2 \) are any two problems in \( NP \) such that \( P_1 \leq_p P_2 \), then \( P_2 \leq_p P_1 \). Prove that this would imply that \( P = NP \).

   (b) Professor Lai is studying an interesting problem called the Polygon Intersection Testing problem (PIT). He claims to have proved that PIT is NP-complete by showing that PIT is in \( NP \) and that PIT \( \leq_p \) VC (VC is the Vertex Cover problem). Is this a valid approach for proving that PIT is NP-complete? Explain.