1. A strategy improvement algorithm for stopping SSGs starts with an arbitrary pair of strategies for Max and Min. At each iteration, the algorithm modifies the currently obtained strategies (σ, τ) (for Max, Min respectively) to a new pair (σ', τ') based on the values $\bar{v}_{\sigma,\tau}$. Which of the following modification schemes are correct? Justification is not necessary.

   (i) σ' is obtained from σ by switching all $\bar{v}_{\sigma,\tau}$ switchable max nodes, τ' is the Min strategy that is optimal with respect to σ'

   (ii) τ' is obtained from τ by switching all $\bar{v}_{\sigma,\tau}$ switchable min nodes, σ' is the Max strategy that is optimal with respect to τ'

   (iii) σ' is obtained by switching all $\bar{v}_{\sigma,\tau}$ switchable max nodes, τ' is obtained by switching all $\bar{v}_{\sigma,\tau}$ switchable min nodes

   (iv) σ' is the optimal Max strategy with respect to τ, and τ' is the optimal Min strategy with respect to σ'

2. Consider the translation of a discounted payoff game to an SSG as discussed in class. Does this translation give a stopping SSG? Justify.

3. Show that the value iteration method for a stopping SSG converges to its value vector if the initial vector assigns 1 to all nodes.

4. Let G be a stopping SSG, with vertex x as the 0-sink and vertex y as the 1-sink. Let G' be the SSG obtained from G by interchanging the sinks: vertex x becomes the 1-sink and vertex y becomes the 0-sink. The rest of the graph is the same. Suppose the value of a vertex a in G equals v_a. Is the value of a in G' equal to $1 - v_a$? Justify.

5. Consider a generalized SSG.

   (i) If the value of a sink vertex is decreased by κ, how does the value vector change?

   (ii) If the value of some sink vertices are decreased by κ_1 and some are increased by κ_2, what can you say about the new value vector?