1. Lecture Notes; Chapter 6.4, Exercise 8.

2. Alice and Bob seek each other. Simultaneously, Alice puts effort $s_A$ and Bob puts effort $s_B$ to search. The probability of meeting is $s_A s_B$; the value of the meeting is $v_A \geq 0$ for Alice and $v_B \geq 0$ for Bob, and the search costs $s_A^3$ to Alice and $s_B^3$ to Bob.

(a) Compute the set of all rationalizable strategies.
(b) How do the rationalizable search efforts change with $v_A$ and $v_B$?

3. Consider a game with a finite set $N = \{1, \ldots, n\}$ of players and a finite set $S = S_1 \times \cdots \times S_n$ of strategy profiles. A general information structure is a list $(\Omega, I_1, \ldots, I_n, p_1, \ldots, p_n)$ where $I_i$ is the information partition of $i$ and $p_i \in \Delta(\Omega)$ is the prior belief of $i$ for every $i \in N$. For every rationalizable strategy $s_i^* \in S_i^\infty$ of every player $i$, show that there exist a general information structure $(\Omega, I_1, \ldots, I_n, p_1, \ldots, p_n)$ and an adapted strategy profile $(s_1, \ldots, s_n)$ such that

- $s_i(\omega^*) = s_i^*$ for some $\omega^* \in \Omega$ and
- $s_j(\omega) \in \arg\max_{s_j \in S_j} E_{p_j}[u_j(s_j, s_{-j}) | I_j(\omega)]$ for every $\omega \in \Omega$ and $j \in N$.

[Hint: For every $i \in N$ and every $s_i \in S_i^\infty$, $s_i$ is best reply a belief $\mu_i^{s_i}$ on $S_i^\infty$. Take $\Omega = S^\infty$.]

4. Characterize the set of all correlated equilibrium distributions for the following game:

\[
\begin{array}{ccc}
\text{L} & \text{R} \\
\text{U} & 3, 1 & 0, 0 \\
\text{D} & 0, 0 & 1, 3 \\
\end{array}
\]