MICROECONOMIC PROBLEMS #8

Problem 1
Two competitors on a market prepare to launch a new product. The first considers two strategies, differing by scale, costs and projected revenues – all of which depend on whatever the competitor chooses to do. The other one has three strategies at his disposal, where the final result is also dependent upon the choice of competitor. The results for all combinations are available in the matrix below.

$$
\begin{array}{ccc}
(4,4) & (0,1) & (-1,0) \\
(1,1) & (4,1) & (2,3)
\end{array}
$$

Are there dominant and dominated strategies in this game?

Problem 2
Are there Nash equilibria in Problem 1?

Problem 3
If there is any Nash equilibrium, is it equivalent to maximum sum of revenues?

Problem 4
If you know that Nash equilibrium of the game below has been fund in (1,2), what can you say about the value of x in the table?

$$
\begin{array}{cc}
(0,1) & (3,0) \\
(1,2) & (-1,x)
\end{array}
$$

Problem 5
Find a Nash equilibrium with the mixed strategies in the game as described below.

$$
\begin{array}{cc}
(0,0) & (0,-1) \\
(1,0) & (-1,3)
\end{array}
$$

Problem 6
Let's consider the following matrix

$$
\begin{array}{cc}
(10,8) & (3,10) \\
(12,0) & (4,4)
\end{array}
$$

(a) Is that an example for a *prisoner's dilemma?*
(b) What is the Nash equilibrium in this game?

Problem 7
Consider the following game:

$$
\begin{array}{cc}
(-6,-5) & (10,5) \\
(5,10) & (-5,-6)
\end{array}
$$

(a) What is the Nash equilibrium?
(b) If player A has the first mover advantage, what will be the outcome?
(c) If player B has the first mover advantage, what will be the outcome?