Problem 1. Find all Nash equilibria, as well as their payoffs, of the (cardinal) game

	C	D
A	$4,8$	$2,0$
B	$6,2$	$0,8$

Problem 2. Find all rationalizable pure strategies, for each player, of the (cardinal) game

	L	M	R
A	$3,5$	$2,0$	$2,2$
B	$5,2$	$1,2$	$2,1$
C	$9,0$	$1,5$	$3,2$

Problem 3. There are five basic outcomes. Jane has a vNM ranking that can be represented by both utility function U and V, given by

$$\begin{bmatrix} & o_1 & o_2 & o_3 & o_4 & o_5 \\ U: & 44 & 170 & -10 & 26 & 98 \\ V: & 32 & 95 & 5 & 23 & 59 \end{bmatrix}.$$

Normalize both U and V and verify that you get the same normalized utility function. Also transform U into V via positive affine transformation of form $V = aU + b$ with $a > 0$.

Problem 4. Find the simple lottery corresponding to the compound lottery

$$\begin{bmatrix} \begin{pmatrix} o_1 & o_2 & o_3 & o_4 \\ \frac{2}{5} & \frac{1}{10} & \frac{3}{10} & \frac{1}{5} \end{pmatrix} & o_2 & \begin{pmatrix} o_1 & o_3 & o_4 \\ \frac{1}{5} & \frac{1}{5} & \frac{3}{5} \end{pmatrix} & \begin{pmatrix} o_2 & o_3 \\ \frac{1}{3} & \frac{2}{3} \end{pmatrix} \\ \frac{1}{8} & \frac{1}{4} & \frac{1}{8} & \frac{1}{2} \end{bmatrix}$$

Problem 5. Consider the two lotteries

$$L_1 = \begin{bmatrix} \$28 \\ 1 \end{bmatrix}, \quad L_2 = \begin{bmatrix} \$10 & \$50 \\ \frac{1}{2} & \frac{1}{2} \end{bmatrix}.$$

Ann has vNM utility function $U_A(\$m) = \sqrt{m}$, whereas Bob has vNM utility function $U_B(\$m) = 2m - m^4/100^3$. Rank the two lotteries for both Ann and Bob, and show that they are both risk averse.