Game Theory (STAT 155) Worksheet #3, 02/08/2021

1. For games with following payoff matrices find the value of the game and some safety strategies for both players:

   (a) $\begin{pmatrix} 1 & -2 \\ -3 & 5 \end{pmatrix}$

   (b) $\begin{pmatrix} 3 & 1 \\ 5 & 3 \end{pmatrix}$

   (c) $\begin{pmatrix} 1 & 2 & 3 & 5 & 8 \\ 8 & 5 & 3 & 2 & 1 \end{pmatrix}$

   (d) $\begin{pmatrix} 1 & 6 \\ 5 & 4 \\ 3 & 5 \end{pmatrix}$

   (e) $\begin{pmatrix} 2 & 4 & 4 \\ 3 & 2 & 1 \\ 2 & 2 & 4 \end{pmatrix}$

   (f) $\begin{pmatrix} 2 & 4 & 5 \\ 4 & 4 & 4 \\ 8 & 4 & 2 \end{pmatrix}$

   (g) $\begin{pmatrix} 11 & 3 & 9 \\ 12 & 5 & 5 \\ 13 & 7 & 1 \end{pmatrix}$

   (h) $\begin{pmatrix} -5 & 3 & -3 \\ 1 & 2 & 0 \\ 5 & -3 & -2 \end{pmatrix}$

2. Show that, if a zero-sum game $A = (a_{i,j})_{i,j}$ has two saddle points (i_1, j_1) and (i_2, j_2), then $a_{i_1,j_1} = a_{i_2,j_2}$.