

# UNIVERSITY OF CALIFORNIA, BERKELEY

## DEPARTMENT OF STATISTICS

### STAT-155: Game Theory

Fall 2013

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Assignment # 11

Date Given: November 25, 2013 (Monday)  
Date Due: December 02, 2013 (Monday)

Total Points: 20

1. Consider a *two-person general-sum* game  $(\mathbf{X}, \mathbf{Y}, (A, B))$ . Let the safety values for the two players be  $v_I$  and  $v_{II}$ . Show that if  $(\mathbf{x}^*, \mathbf{y}^*)$  is a *Nash equilibrium* then

$$\mathbf{x}^{*T} A \mathbf{y}^* \geq v_I \quad \text{and} \quad \mathbf{x}^{*T} B \mathbf{y}^* \geq v_{II}.$$

2. Consider the following *two-person general-sum* game with the payoff bimatrix

$$\begin{pmatrix} (0, 0) & (1, 2) & (2, 0) \\ (0, 1) & (2, 0) & (0, 1) \end{pmatrix}$$

- (a) Find the safety values for the two players and a pair of safety strategies.
- (b) Find all the *pure Nash equilibria*.
- (c) Find the *mixed Nash equilibria* using equalizing strategies.