

Finite Mathematics (Math 10120), Spring 2016

Quiz 6, Monday April 25

Solutions

1. (4 pts) **R**afael Edward Cruz and Donald “**C**lassy Guy” Trump are competing for votes in the upcoming Indiana primary. On a day when they both campaign in Indiana, Cruz gains 100 voters from Trump. If Cruz campaigns but Trump doesn’t, Cruz gains 200 voters. If Trump campaigns but Cruz doesn’t, Trump wins over 300 Cruz voters. On a day when neither campaigns in Indiana, no voters change their allegiance.

Represent this information as a payoff matrix of a two-person zero-sum game, with **R**afael Cruz as the row player. The first row should correspond to Cruz campaigning in Indiana, and the first column should correspond to Trump campaigning.

Solution:

	Campaign	Don’tcampaign
Campaign	100	200
Don’tcampaign	-300	0

2. (4 pts) Richard and Clive play a zero-sum game with payoff matrix for Richard given by

	<i>C1</i>	<i>C2</i>	<i>C3</i>
<i>R1</i>	0	-2	3
<i>R2</i>	2	1	-1.

If Richard plays the mixed strategy $[\.4 \ .6]$ and Clive plays $\begin{bmatrix} \cdot 2 \\ \cdot 3 \\ \cdot 5 \end{bmatrix}$, what is the expected payoff for Richard?

Solution:

$$\cdot 4(0)\cdot 2 + \cdot 4(-2)\cdot 3 + \cdot 4(3)\cdot 5 + \cdot 6(2)\cdot 2 + \cdot 6(1)\cdot 3 + \cdot 6(-1)\cdot 5 = 0.48.$$