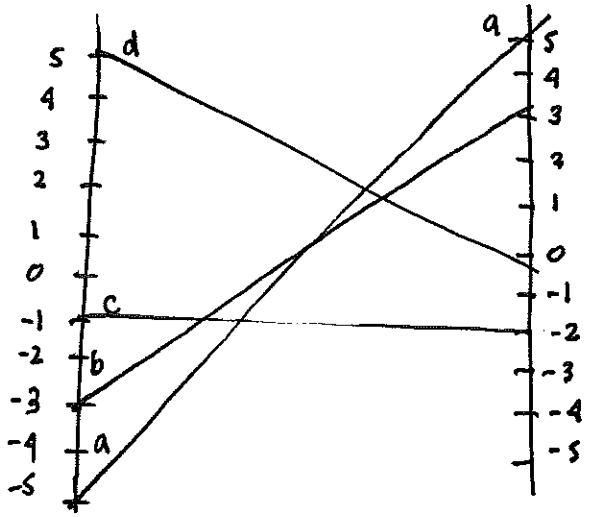
EPA2142: Policy and Decision Models
Quiz #1, version #1
16 November 2009

Name:
Student Number

Examine the following two-person zero-sum game. Payoffs are to Rose.

You may use whatever methods you wish in answering the following questions. You have 30 minutes. Use additional sheets as needed. Please submit all work.

		Colin A	Colin B	
Rose	A	-5	5	
	B	-3	3	← non-active
	C	-1	-2	← dominated non-active
	D	5	0	



a. Identify the dominated and non-active strategies for Rose (1 pt.).

See above

b. Recommend an optimal strategy for Rose (4 pts).

$-5p + 5 - 5p = 5p$

$p = \frac{5}{15}$

c. Recommend an optimal strategy for Colin (4 pts).

$X = \frac{1}{3}$

$-5X + 5 - 5X = 5X$

d. Calculate the value of the game (1 pt.).

$V = -5 \cdot \frac{1}{9} + \frac{2}{9} \cdot 5 + \frac{2}{9} 5 + \frac{4}{9} 0 = \frac{5}{3} \left(\frac{15}{9}\right)$

			$\frac{1}{3}$ A	$\frac{2}{3}$ B
			X	1-X
$\frac{1}{3}$	π	A	-5	5
$\frac{2}{3}$	$1-\pi$	D	5	0

$-5X + 5 - 5X = 5X$

$5 = 15X$

$-5\pi + 5 - 5\pi = 5\pi$

$= \frac{-5}{9} + \frac{10}{9} + \frac{10}{9}$

$\frac{15}{9} = \frac{5}{3}$

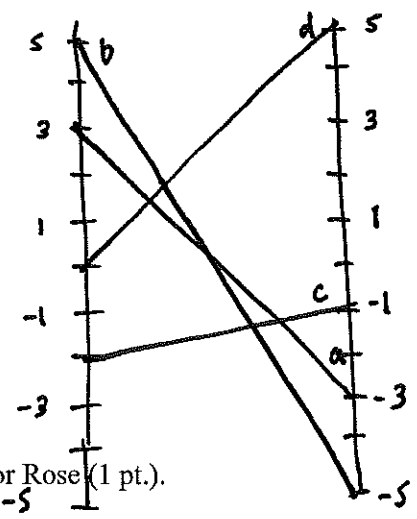
EPA2142: Policy and Decision Models
Quiz #1, version #2
16 November 2009

Name:
Student Number

Examine the following two-person zero-sum game. Payoffs are to Rose.

You may use whatever methods you wish in answering the following questions. You have 30 minutes. Use additional sheets as needed. Please submit all work.

		Colin A π	Colin B $1-\pi$	
Rose	A	3	-3	non-active
	B ρ	5	-5	
	C	-2	-1	dominated
	D	0	5	
	$1-\rho$			



a. Identify the dominated and non-active strategies for Rose (1 pt.).

see above

b. Recommend an optimal strategy for Rose (4 pts).

Rose should play B $\frac{1}{3}$ and D $\frac{2}{3}$

$5\pi - 5 + 5\pi = 5 - 5\pi$
$5\pi + 10\pi = 10$
$15\pi = 10$
$\pi = \frac{10}{15}$

c. Recommend an optimal strategy for Colin (4 pts).

Colin should play A $\frac{2}{3}$ and B $\frac{1}{3}$ $5\rho = -5\rho + 5 - 5\rho$

$15\rho = 5$
$\rho = \frac{5}{15}$

d. Calculate the value of the game (1 pt.).

$(1-\rho)(1-\pi)\,5 + \rho\pi\,5 + \rho(1-\pi)(-5)$

$\frac{2}{3}\ \frac{1}{3}\ 5 \qquad \frac{1}{3}\ \frac{2}{3}\ 5 \qquad \frac{1}{3}\ \frac{1}{3}\ -5 \quad =$

$\frac{10}{9} + \frac{10}{9} - \frac{5}{9} = \frac{15}{9} = \frac{5}{3}$ V