

ECON 0200 | Example Exam

Given: Monday, April 22

Name: _____

Student ID: _____

This Final Exam will take 1 hour and 50 minutes. Exams are designed to both test your knowledge and challenge you to apply familiar concepts in new environments. Treat it as if you're trying to show me that you understand the material. Answer clearly and completely.

Academic Conduct Code

The following academic conduct code is designed to protect the integrity of your work, not to make school feel overbearing. Print your name/initials beside the five academic honesty agreements before beginning.

I pledge to my fellow students, the university and the instructor, that:

_____ I will complete this MiniExam solely using my own work.

_____ I will not use any digital or hardcopy resources unless explicitly allowed by the instructor.

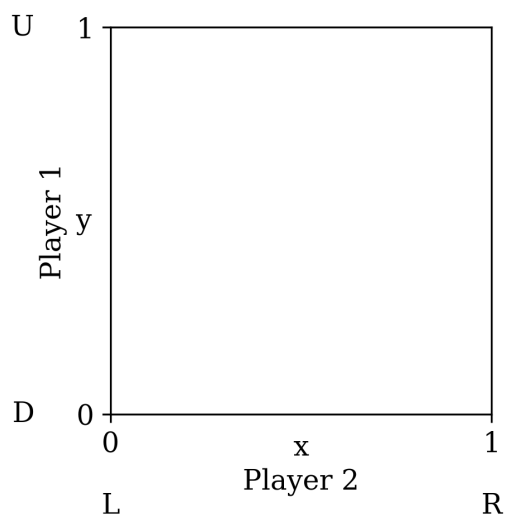
_____ I will not communicate with others about the MiniExam in the room or remotely.

_____ I will not discuss the MiniExam with students who did not take the MiniExam at the same time.

Game 1 (of 11). For the following game:

		$(1-x)$	x
		L	R
y	U	9, 4	13, 3
$(1-y)$	D	4, 6	13, 7

- Which outcomes are Pareto optimal (*if none, write "none"*)?
- List all NE in pure strategies.
- Is this game zero sum?
- List all dominant strategies for this game (*if none, write "none"*).
- Plot both player's best responses and all MSNE on the graph below.



Game 2 (of 11). Use Version 1 for a through e. Use Version 2 for f through l.

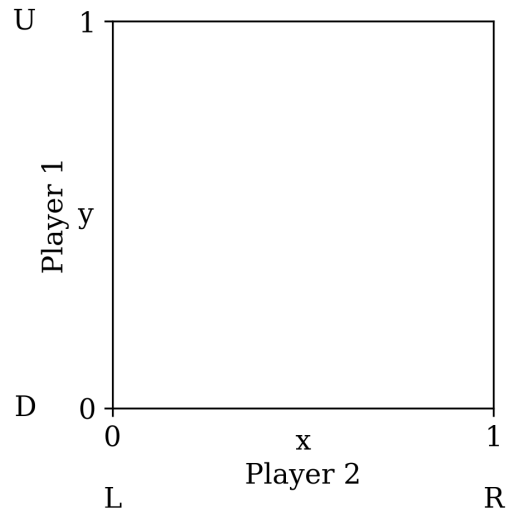
		Version 1		Version 2	
		$(1-x)$	x	$(1-f)$	f
		L	R	A	B
y	U	1, 1	15, 4	A	1 15
	$(1-y)$ D	4, 15	7, 7	B	4 7

a) Which outcomes are Pareto optimal (*if none, write "none"*)?

b) List all NE in pure strategies.

c) Is this game zero sum?

d) Plot both player's best responses and all MSNE on the graph below.



e) List all dominant strategies for this game (*if none, write "none"*).

f) What is the fitness of A when the population mix is all A?

g) What is the fitness of B when the population mix is all A?

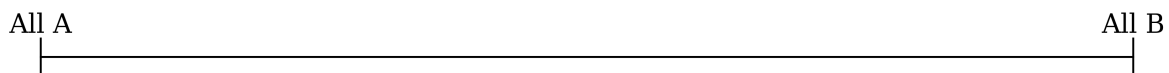
h) Is A ESS?

i) What is the fitness of A when the population mix is all B?

j) What is the fitness of B when the population mix is all B?

k) Is B ESS?

l) Label all ESS and their values on the phase space graph below.



Game 3 (of 11). Use Version 1 for a through e. Use Version 2 for f through l.

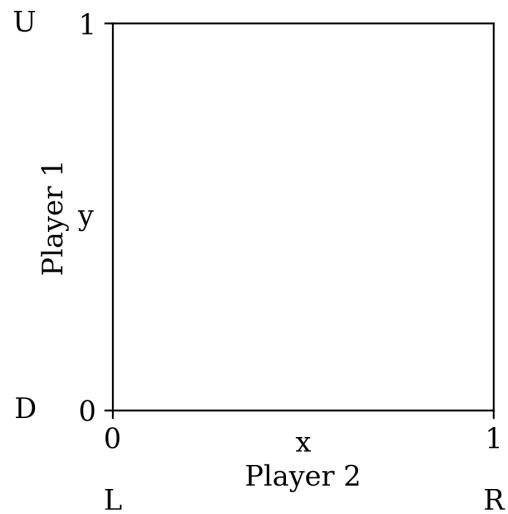
		Version 1				Version 2	
		$(1-x)$	x			$(1-f)$	f
		L	R			A	B
y	U	12, 12	5, 12	A		12	5
$(1-y)$	D	12, 5	16, 16	B		12	16

a) Which outcomes are Pareto optimal (*if none, write "none"*)?

b) List all NE in pure strategies.

c) Is this game zero sum?

d) Plot both player's best responses and all MSNE on the graph below.



e) List all dominant strategies for this game (*if none, write "none"*).

f) What is the fitness of A when the population mix is all A?

g) What is the fitness of B when the population mix is all A?

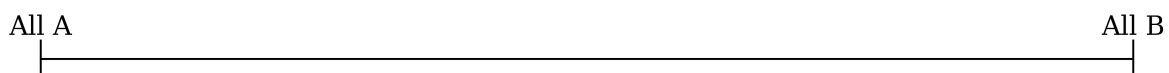
h) Is A ESS?

i) What is the fitness of A when the population mix is all B?

j) What is the fitness of B when the population mix is all B?

k) Is B ESS?

l) Label all ESS and their values on the phase space graph below.



Game 4 (of 11). For the following game:

	L	R
U	200, 200	12, 210
D	210, 12	50, 50

- a) In an infinitely repeated setting, what is the present value of playing Grim-Trigger against Grim-Trigger?

- b) In an infinitely repeated setting, what is the present value of playing D in all periods against Grim-Trigger?

- c) In an infinitely repeated setting, for what discount factors δ can cooperation be sustained against Grim-Trigger?

- d) In an infinitely repeated setting, what is the present value of playing Tit-For-Tat against Tit-For-Tat?

- e) In an infinitely repeated setting, what is the present value of playing D in the first period and Tit-For-Tat afterward against Tit-For-Tat?

- f) In an infinitely repeated setting, for what discount factors δ can cooperation be sustained against Tit-For-Tat?

- g) In an indefinitely repeated game, if the probability of playing subsequent rounds is 7% after each round concludes, which strategies sustain cooperation – Grim Trigger, Tit-for-tat, both, or neither?

Game 5 (of 11). For the following game:

	$(1-f)$	f
	A	B
A	7, 7	26, 6
B	6, 26	19, 19

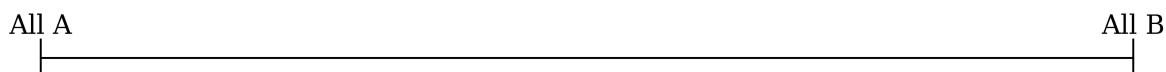
a) Which outcomes are Pareto optimal (*if none, write "none"*)?

b) List all NE in pure strategies

c) Is this game zero sum?

d) When starting from a population mix of 50-50, what is the population mix of A after 1 gen?

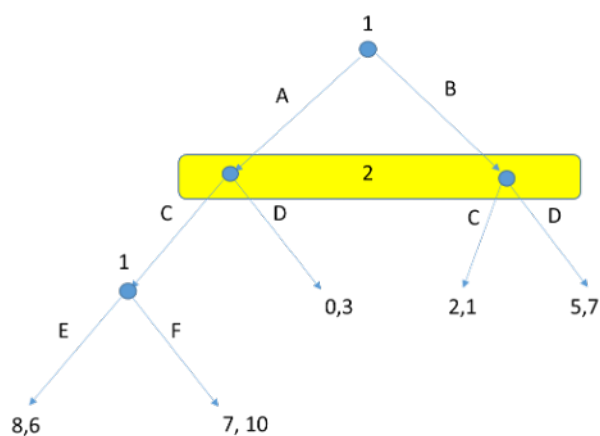
e) Label all ESS and their values on the phase space graph below.



Game 6 (of 11). For the following game:

a) List all NE in pure strategies.

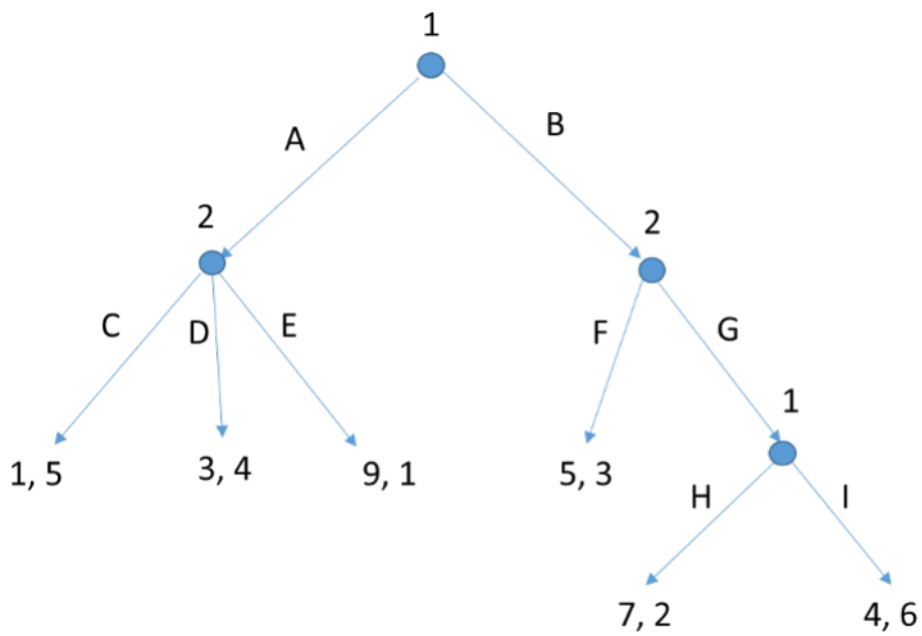
b) List all SPNE in pure strategies.



Game 7 (of 11). For the following game:

a) List all NE in pure strategies.

b) List all SPNE in pure strategies.



Game 8 (of 11). Keynesian Beauty Contest

Suppose a very large number of players are trying to guess a target number T , where the target is equal to $3/4$ of the average plus 20.

- a) Write the mathematical relationship between the Nash equilibrium guess and the Target.

- b) Write the mathematical relationship between the Nash equilibrium guess and the average guess.

- c) What is the Nash equilibrium?

Game 9 (of 11). Symmetric Cournot Competition

Suppose there are 2 firms in an industry. Demand is represented by the following equation: $P = 710 - Q$. All firms are symmetric with a marginal cost of 50.

- a) What is firm 1's profit function if there are 2 firms?

- b) What is the best response function for firm 1 if there are 2 firms?

- c) What is the equilibrium quantity and price for firm 1 with 2 firms?

- d) If there were 3 firms, what is firm 1's equilibrium quantity and price?

Game 10 (of 11). Ultimatum Game

Consider an Ultimatum game with counter-offers that can only be split by \$1. The initial pool is \$105 and declines by \$25 with each counter offer and has a minimum of \$0. Players will only accept an offer if it is better than what they can make by counter-offering. Players are “rational” and have full (common) knowledge relating to the game. What is the SPNE initial offer? _____

Game 11 (of 11). Vote Counting

20 voters prefer: $A > B > C > D$

10 voters prefer: $B > A > D > C$

8 voters prefer: $B > D > C > A$

7 voters prefer: $D > B > C > A$

4 voters prefer: $C > B > D > A$

a) Which alternative wins a Plurality vote? _____

b) Does Plurality voting select the Condorcet Winner? _____

c) Which alternative wins using a Borda Count (*3 points for 1st, 2 points for 2nd,...*) to pick the top two, then an Instant Runoff using the top two? _____