# OR 3: Lecture 2 - Normal Form Games

## Recap

In the [previous lecture](Lecture_3-Dominance.html) we discussed:

* Predicting rational behaviour using dominated strategies;
* The CKR;

We did discover certain games that did not have any dominated strategies.

## Best response functions

### Definition

In an player normal form game. A strategy for player is a best response to some strategy profile if and only if for all .

We can now start to predict rational outcomes in pure strategies by identifying all best responses to a strategy.

We will underline the best responses for each strategy giving:

We see that represented a pair of best responses. What can we say about the long term behaviour of this game?

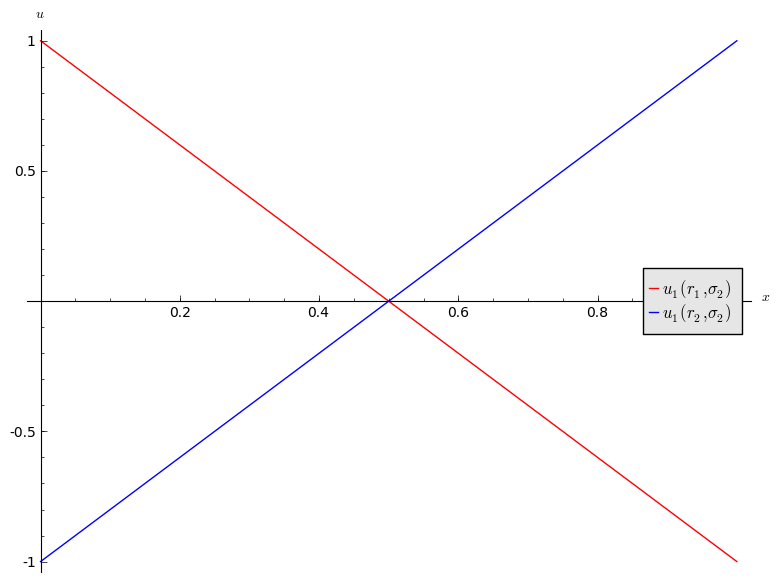
## Connection between best responses and dominance

## Best responses against mixed strategies

We can identify best responses against mixed strategies. Let us take a look at the matching pennies game:

If we assume that player 2 plays a mixed strategy we have:

and

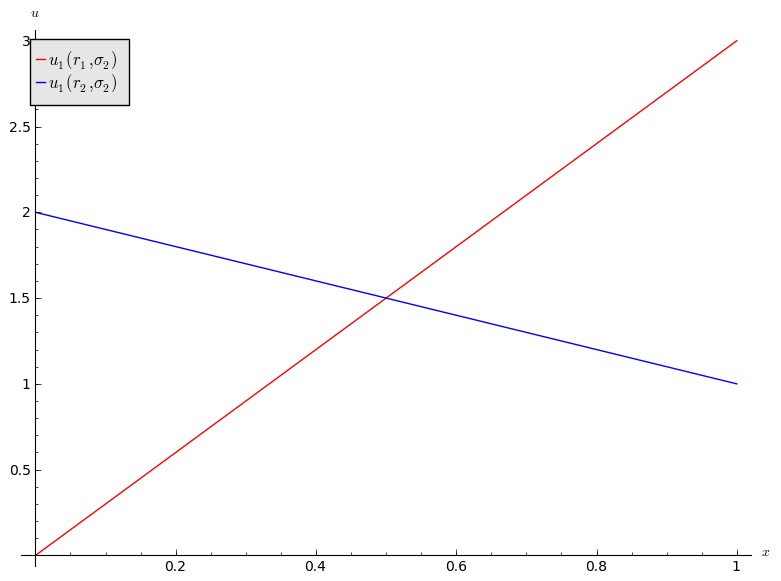


1. If then is a best response for player 1.
2. If then is a best response for player 1.
3. If then player 1 is indifferent.

Let us repeat this exercise for the battle of the sexes game.

If we assume that player 2 plays a mixed strategy we have:

and



1. If then is a best response for player 1.
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