

# Exploring Mixed Strategies with Sage

This sheet was last updated September 26, 2014.

The following instructions are demonstrated in this video: [https://www.youtube.com/watch?v=Jfz9pU\\_2oHM&feature=youtu.be](https://www.youtube.com/watch?v=Jfz9pU_2oHM&feature=youtu.be):

1. Create an account at <https://cloud.sagemath.com/>.
2. Navigate to the Sage code snippet at: <http://interact.sagemath.org/node/4://gist.github.com/drvinceknight/7a72d952b91041905d8a>.
3. Copy the code in to a Sage worksheet on cloud.sagemath.

Using your notes try and investigate the following questions. Attempt to do this with the Sage interact but also using the mathematical techniques seen in the lecture.

1. Modify the input to consider the following game:

7, 3	4, 1
1, 2	6, 4

2. If player 1 is using the mixed strategy:  $\rho = (.3, .7)$ , what is player 2's best response?
3. What are the equilibria strategies?
4. What are the expected utilities to both players at each equilibria?