Part I (due at the beginning of class Wednesday, December 3, 2025)

Finish reading Chapter 11.

Remember that what you turn in for Part I should have 3 parts, as mentioned in the syllabus:

(a) Your responses to the reading questions below.

(b) Your own questions/comments on the reading.

(c) The amount of time you spent on Part I (including the time spent reading).

Reading Questions

1. Draw an example of a payoff polygon for a game with a single point as the Pareto optimal outcome (this possibility is mentioned in the reading, but the examples in Figure 11.1 do not illustrate it).
2. What do you think it should mean to declare a game to be solvable?

Part II: Exercises (prepare for class Wednesday, December 3, 2025)

1. Exercise 10.2 (Rachel and Madison have this one)
2. Exercise 11.1 (Wesley St. has this one)
3. Exercise 11.2 (new! unclaimed!)
4. Exercise 11.3 (also new!)

Part III: Homework Problems (due Wednesday, December 10 at the beginning of class)

Let's just do revisions/work on your portfolio this time since I'm behind on grading your other things.

Portfolio List

You should have the following in your portfolio when you turn it in:

- an introduction giving a quick overview of Game Theory (e.g., what it is, who does it, and what sorts of applications does it have) to a math-interested person who has no knowledge of game theory. This can take the form of a few written paragraphs or can be something more creative like an advertisement for Game Theory or a comic.

- Your original hopes and dreams for the class (what you turned in the first week).
- Create a Guide to Matrix Games section and summarize all the things we learned about matrix games. Create your own examples to illustrate each item. (Note that we're not done with matrix games yet, so you will continue adding to this section.)
- Choose one of the versions of tic-tac-toe that we've played in class that we did not solve and that is not the original tic-tac-toe and analyze it as far as you can using as many of the tools we develop in this class as possible (so this is an ongoing assignment).
- Create a Guide to Game Trees section and summarize all the things we learned about game trees, including connecting a game tree to a matrix game. Create your own examples to illustrate each item.
- Create a Guide to Utility Theory section and summarize all the things we learned about utility. Create your own examples to illustrate each item (something like Exercise 9.3—but of your own making—could cover several of the points). (It's a bit early to finish this, perhaps, as we have many questions we're discussing about utility still, but I thought I'd put it here in case you want to start.)
- Games against Nature: Construct an at least 3×3 matrix game against Nature in which two of the decision strategies from Chapter 10 suggest one course of action and the other two suggest a different course of action (but the same as each other). In your presentation of your game, make sure to explain what each decision strategy is and how you're applying it to your particular situation. (Of course, Hurwicz' suggestion will depend on your choice of α.)
- Summarize the key points of Nash equilibria and strategic play, creating your own illustrative examples.
- At least one of the following three things: a game you created and your analysis of the game, an already-existing game that you explain and analyze, or an application of game theory that you researched and explained with some original examples.
- a conclusion that covers what you learned (referencing your first portfolio assignment about what your hopes were for the course) and what questions Game Theory has brought up for you. This, too, can take the form of a few written paragraphs or can be something more creative.

Your portfolio should be typed to the extent possible (hand-drawn games and illustrations are fine) and printed out. Your portfolio presentation should be 10–15 minutes long and cover your tic-tac-toe analysis and the game you created/already existing game/application section that you did. If everyone does the same version of tic-tac-toe, we'll skip that part of the presentation, and if your other section will take the whole time to present, then just skip the tic-tac-toe part in your presentation anyway.