CS 103: Networks
Homework 4

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Instructions

- Due Thursday 10/29 at *beginning* of class
- List all collaborators on your submission
- Review the course collaboration policy (collaboration encouraged; write own solutions).

Problems

Complete all of these:

1. Chapter 12, Exercise 1
2. Chapter 12, Exercise 2 (note that the problem say to attach the fourth node "by a single edge")
3. Chapter 12, Exercise 3
4. What is the Nash bargaining split of \$1 between two parties A and B if A has an outside option of 10 cents and B has an outside option of 60 cents?
5. Consider a three-way Nash bargaining situation. There are three parties A, B, and C, and they have \$1 to split amongst themselves if all of them agree to make a deal. However, each also has an outside option.

   (a) Suppose A has an outside option of 10 cents, B has an outside option of 20 cents, and C has an outside option of 40 cents. Should A, B, and C decide to make a deal? Why?

   (b) What can you say in general about when parties A, B, and C should make a deal? Give a precise statement that describes what conditions the outside options must satisfy so that all parties are better off making a deal.

   (c) Assume that A, B, and C have the outside options specified in part (a) of the problem and that they do indeed decide to make a deal. Following the principles of two-person Nash bargaining, how do you think A, B, and C should split the money? Say exactly how much each of them gets. Why?