

Homework Assignment 12

Assigned Tuesday November 30; due Wednesday December 8, 2PM, at SS 1071
(though no penalty for late assignments, up to Friday December 10, 2PM)

Important! Next week tutorials (December 6, 2004, one time only) will take place as follows: Shay's group at SF 1101, Derek's at BA 1190 and Brian's at BA 1130.

Required reading. All of Spivak's Chapters 12 and 13.

To be handed in. From Spivak Chapter 13: Problems 1, 7 (even parts), 8 (even parts), 13 and 37.

Recommended for extra practice. From Spivak Chapter 13: Problems 5, 7 (odd parts), 8 (odd parts), 9, 15 and 39.

Just for fun. The game of 15 is played as follows. Two players alternate choosing cards numbered between 1 and 9, with repetitions forbidden, so the game ends at most after 9 moves (or $4\frac{1}{2}$ rounds). The first player to have within her/his cards a set of precisely 3 cards that add up to 15 wins.

Does this game has a winning strategy? What is it? Who wins, the first to move or the second?

I heard this problem from a student in my other class, Jacob Tsimerman; he heard from a former UofT student, Ravi Vakil, who heard it from Eric Mendelsohn. It may have a longer history, though. (The cards are from <http://www.jfitz.com/cards/>).

Hint. The first player marks X's, the second marks O's:

