Math 21 - 01
Homework #5
10/18/2019

# Homework #6

**1**

(a) How many "oddballs" does this 15-puzzle position have?

| | | | |
|---|---|---|---|
| 3 | 14 | 15 | 9 |
| 2 | 6 | 5 | 13 |
| 8 | 7 | 12 | 4 |
| 10 | 1 | 11 | |

(b) Based on your answer to (a), determine if the 15 puzzle position is solvable.

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**2** Consider the game of triangular peg solitaire with 5 rows, with 1, 2, 3, 4, and 5 holes respectively. It has 14 pegs and the hole in Row 1 is unoccupied. Same rules as traditional peg solitaire. Is it possible to reduce the puzzle to a single peg in the second row? (You may build on the strategy used in class.)

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**3**

(a) In Texas Hold'em, what is the probability that the first card of the flop is a low card (2 through 9)?

(b) Use this to estimate the probability that all 3 cards in the flop are low.

(c) Compute the exact probability that all 3 cards in the flop are low.

(d) What would be the approximate fair odds for betting that all 3 cards in the flop are low?

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**4** You are dealt an 8 and 9 of diamonds in Texas Hold'em. The flop contains 6 of diamonds, 7 of diamonds, and Queen of hearts. You suspect that one of your opponents has a pair that is higher than 9s.

(a) How many outs do you have?

(b) Estimate your probability of getting a straight or flush from the next two cards.

(c) The next card is the two of clubs. Now estimate your probability of getting a straight or flush on the next card.

(d) It's down to you and one other player, you have $10 in chips remaining and your opponent bets $10 bringing the pot to $40. Should you call this bet?

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