

## Homework Assignment 5: Due Monday March 2

### Computation of The Gittins Index

Solve problem 1.8. of Bertsekas Volume II. You may assume that the state space of each bandit process is finite.

### Coin Tossing

Suppose we are faced with 10 biased coins. Each coin's bias (probability of heads) is either  $2/3$  or  $1/3$ . Our prior probabilities over the possible biases of each coin are independent and uniform. At each time, we choose one coin to flip and receive \$1 if the coin lands heads and nothing if it lands tails. Each coin can be flipped at most 100 times. Our objective is to maximize expected discounted revenue, with a discount factor of 0.99. Describe an optimal strategy that selects the next coin to flip given observations to date.

*Remark: The restriction that each coin can be flipped at most 100 times ensures the state space is finite.*