

## Problem Set 3

1. Be sure to specify what you mean when you write down a strategy for a player. E.g., if you write  $(xyz)$  as a strategy, write down what you mean by each action. You might consider labeling all the nodes in the game tree. Convention is to move top to bottom, left to right.

You will need to assign payoffs to each terminal history. Remember that it's only the relative payoff that matters: so if a player prefers  $A$  to  $B$ , assigning 1 to  $A$  and 0 to  $B$  is fine.

2. N/A
3. N/A
4. Explain your reasoning carefully, but we talked about this exact situation in lecture.
5. In the first period of the game, player 1 moves and has 4 strategies (Pass, \$1, \$2, and \$3). The payoff from passing would be  $(0, 2)$  for player 1 and 2 respectively. You should find 4 SPNE's.
6. You cannot use calculus to solve this problem. Solve backwards as usual. A graph may help: plot the child's and parent's payoff as a function of  $t$  (the transfer). The goal of the problem is to show that the child solves:

$$\text{Max}_a \{c(a) + p(a)\}. \tag{1}$$