Part A (30%)
Consider the following game. Two players alternate adding stones to a pile that is initially empty. At each turn, a player may add either one stone or two stones to the pile. The player who adds the sixth stone wins.

Draw the complete min/max tree for this game. Indicate who wins under optimal play from every game state in the min/max tree. You do not need to perform any form of pruning.

Part B (30%)
Consider a variant of the game in part (A) where at each turn, a player may add either two stones or three stones to the pile.

Draw the complete min/max tree for this game. Indicate who wins under optimal play from every game state in the min/max tree. You do not need to perform any form of pruning.

Part C (40%)
Consider a probabilistic variant of the games in parts (A) and (B) where at each turn the player first flips a fair coin. If the coin comes up heads, the player may add either one stone or two stones to the pile on that turn. If the coin comes up tails, the player may add either two stones or three stones to the pile on that turn.

Draw the complete game tree for this game. For each game state in the game tree, indicate the probability that that state leads to a win for player max given optimal play. You do not need to perform any form of pruning.