**Option pricing Model**

We have a Stock with price S0 today and price SUp = S0\*U in up state and SDown = S0\*D in down state. We have a risk-free asset with payoff of R in both states. For each period from t0 to t3, the stock price can either go up or down.

(a) If S0=50, U=1.1, D=0.97, R=1.06. What is the price of a European put option with an exercise price of 50 based on the Binomial model? (Check the slides around slide 15 in lecture 7. The example has 5 dates (t0-t4)) (2pts)

(b) If S0=50, U=1.1, D=0.97, R=1.06. What is the price of an American put option with an exercise price of 50 based on the Binomial model? (slides after 19) (2pts)

(c) If S0=50, U=1.1, D=1, R=1.06. What is the price of a European put option with an exercise price of 50 based on the Binomial model? What about American put? (hint: you don't necessarily need to do calculations, but you will need to tell me the reason) (2pts)

(d) Now, check the VBA functions in the example spreadsheet. See how we can turn complicated calculations into functions that can be easily used. Verify the above answers with these functions. (4pts, these are free points, please take them!)