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1 /usr/local/bin/python3 /Users/aq/Desktop/
  pythonProject/venv/anqi_fu.py
2 #####
  #####
3 Q1: Implement a function which, given v and the
  strike K of a European call option on the asset S,
  expiring after N periods, returns its value V
4 #####
  #####
5 function: value = binomial_option(1, K, N, v,
  output=2)
6 let's try K = 0.8, N = 4, v = 0.35:
7 [[0.4  0.66 1.06 1.66 2.52 3.68]
8  [0.   0.14 0.26 0.46 0.8  1.36]
9  [0.   0.   0.03 0.06 0.12 0.24]
10 [0.   0.   0.   0.   0.   0. ]
11 [0.   0.   0.   0.   0.   0. ]
12 [0.   0.   0.   0.   0.   0. ]]
13 #####
  #####
14 Q2: Implement a function which, given the strike K
  and value V of a European call option on the asset
  S, expiring after N periods, calibrates v to match
  this price.
15 #####
  #####
16 let's try K = 0.8, N = 4, V = 1.66:
17 calibrated v equals  0.35000000000000003
18 [[0 3]]
19 None
20 DISCUSSION:This part is a little ambiguous, I could
  either try this iteration method, Or I could try
  estimating the volatility (sigma), apply the BS
  model, then estimate the u and d
21 #####
  #####
22 Q3:Implement a function which, given v and the
  strike K of an American call option on the asset S
  , expiring after N periods, returns its value.
23 #####
  #####

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24 DISCUSSION: It's never optimal to early exercise AM
    call, we could discuss it this Thursday. value for
    an AM call = EU call.while it different for AM put
    , I demonstrate both value for AM call and put at
    here
25 (0.4, 5)
26 (0.37, 5)
27 #####
    #####
28 Q4: Implement a function which, given v, returns
    the expectation of max S.
29 #####
    #####
30 let's try K = 0.8, N = 4, v = 0.35:
31 4.48
32 Double check with the binomial tree (Price):
33 [[1.    1.35 1.82 2.46 3.32 4.48]
34  [0.    0.65 0.88 1.18 1.6  2.16]
35  [0.    0.    0.42 0.57 0.77 1.04]
36  [0.    0.    0.    0.27 0.37 0.5 ]
37  [0.    0.    0.    0.    0.18 0.24]
38  [0.    0.    0.    0.    0.    0.12]]
39 #####
    #####
40 --- Total run time: 0.015916109085083008 seconds
    ---
41
42 Process finished with exit code 0
43

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