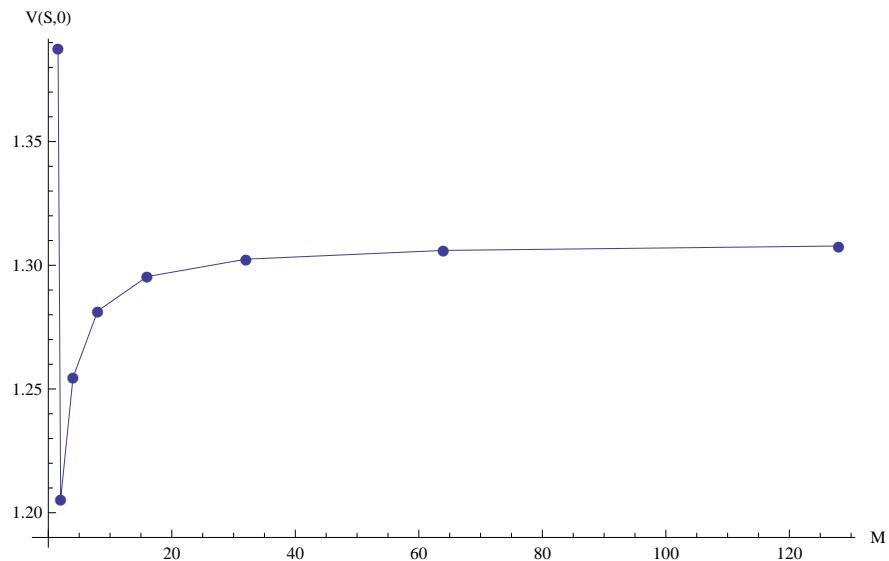
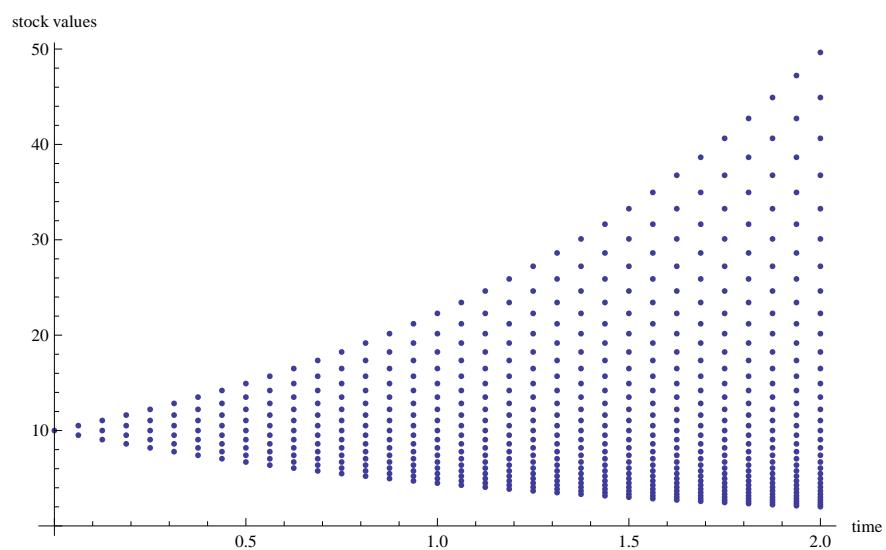


Task 1

Plot of fair (discounted) prices of European call option computed with the binomial tree method:

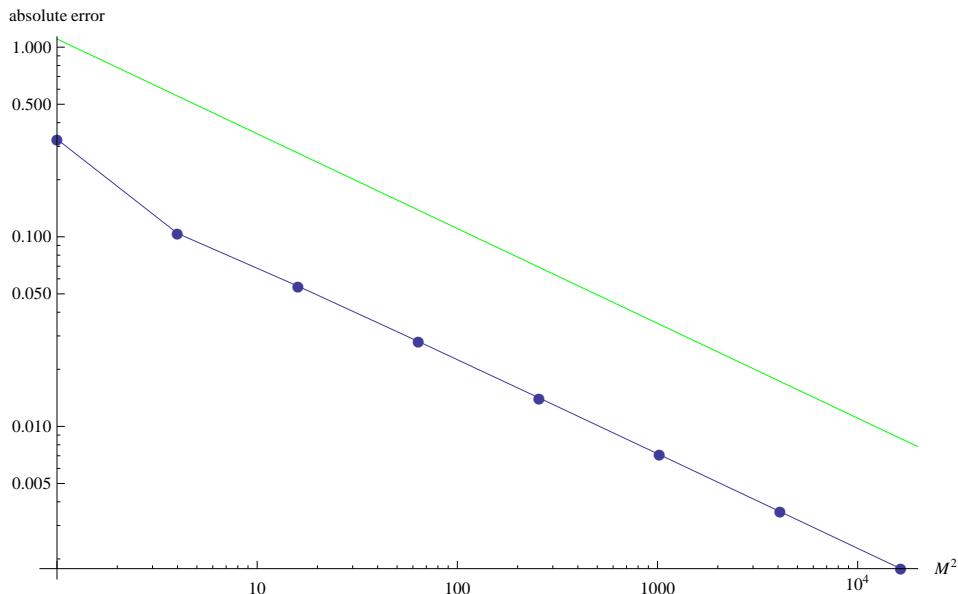


Binomial tree method discretization mesh for $M = 32$:



Task 2

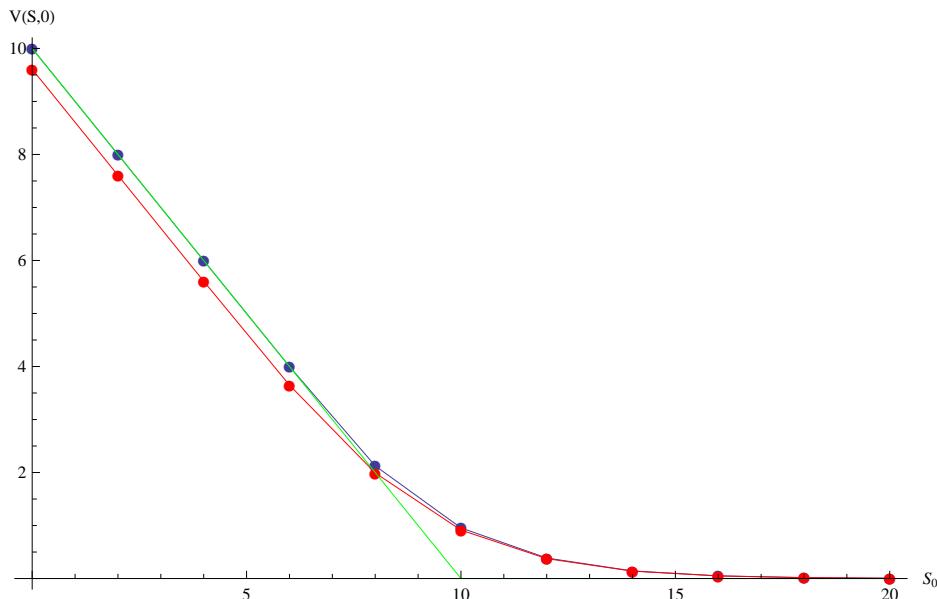
Absolute error of binomial tree method approximation of European call option prices and a line with slope -0.5 :



Thus the convergence rate of the binomial method is about $O(N^{-\frac{1}{2}})$.

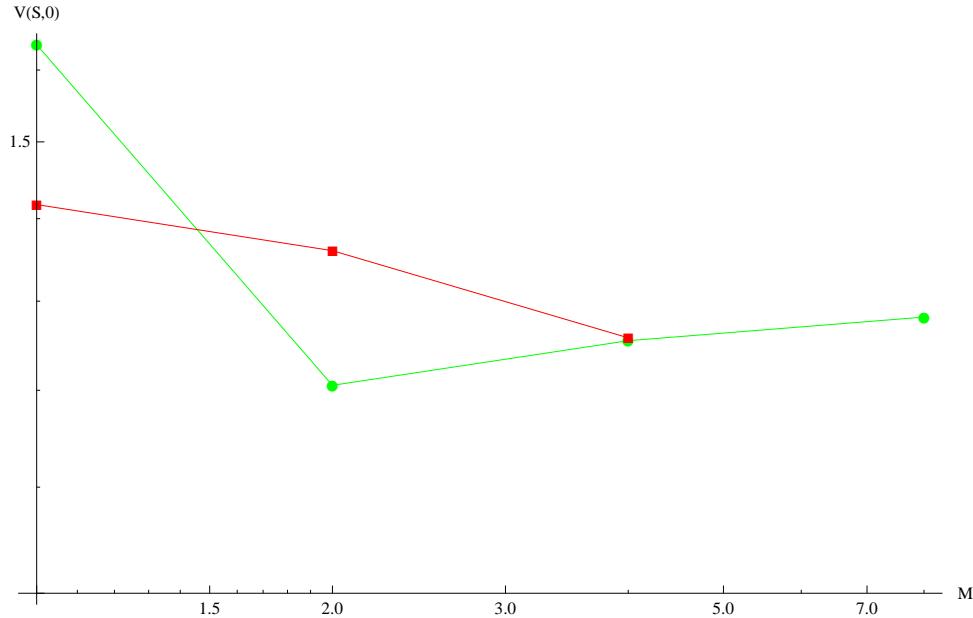
Task 3

Plot of the binomial tree method approximations of European (red) and American (blue) put option prices for different start values S_0 and of the payoff function dependent on $S(T)$ (green):

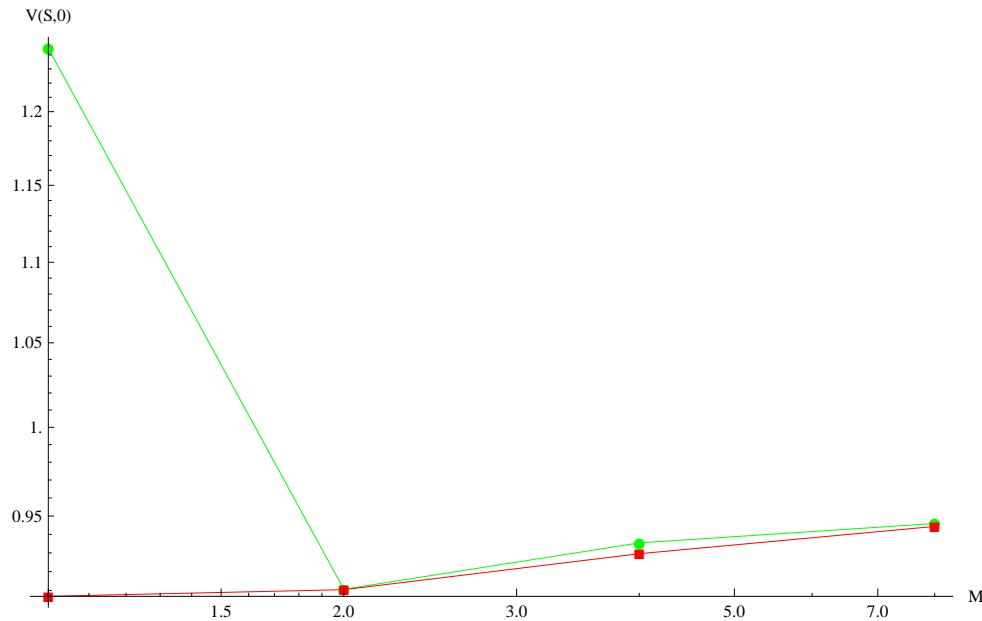


Task 4

Plot of fair (discounted) prices of American call option computed with the binomial tree method (green) and the Broadie-Glasserman algorithm (red):



Plot of fair (discounted) prices of American put option computed with the binomial tree method (green) and the Broadie-Glasserman algorithm (red):



Simulation trees of the Broadie-Glasserman algorithm with $M = 4$:

