

Financial Engineering Lab (MA374)

Neelabh Tiwari

160123024

Department of Mathematics
IIT Guwahati

Assignment - 2
(17 January 2019)

◆ Question 1

The Option Prices for the data -

$$S(0) = 100; K = 100; T = 1; M = 100; r = 8\%; \sigma = 20\%$$

The Call price for set 1 is - 12.0854

The Put price for set 1 is - 4.3970

The Call price for set 2 is - 12.1230

The Put price for set 2 is - 4.4347

Sensitivity Analysis of option price variance with $S(0)$, K , M , r , σ are done by plotting 2-D and 3-D plots (**Page No. 3 Onwards**).

◆ Question 2

The path-dependent derivative used for this question is **Asian Option**.

Payoff for the Asian Call Option = $(S_{\text{avg over path}} - K)^+$

Payoff for the Asian Put Option = $(K - S_{\text{avg over path}})^+$

(K is Strike Price)

The Option Prices for the data -

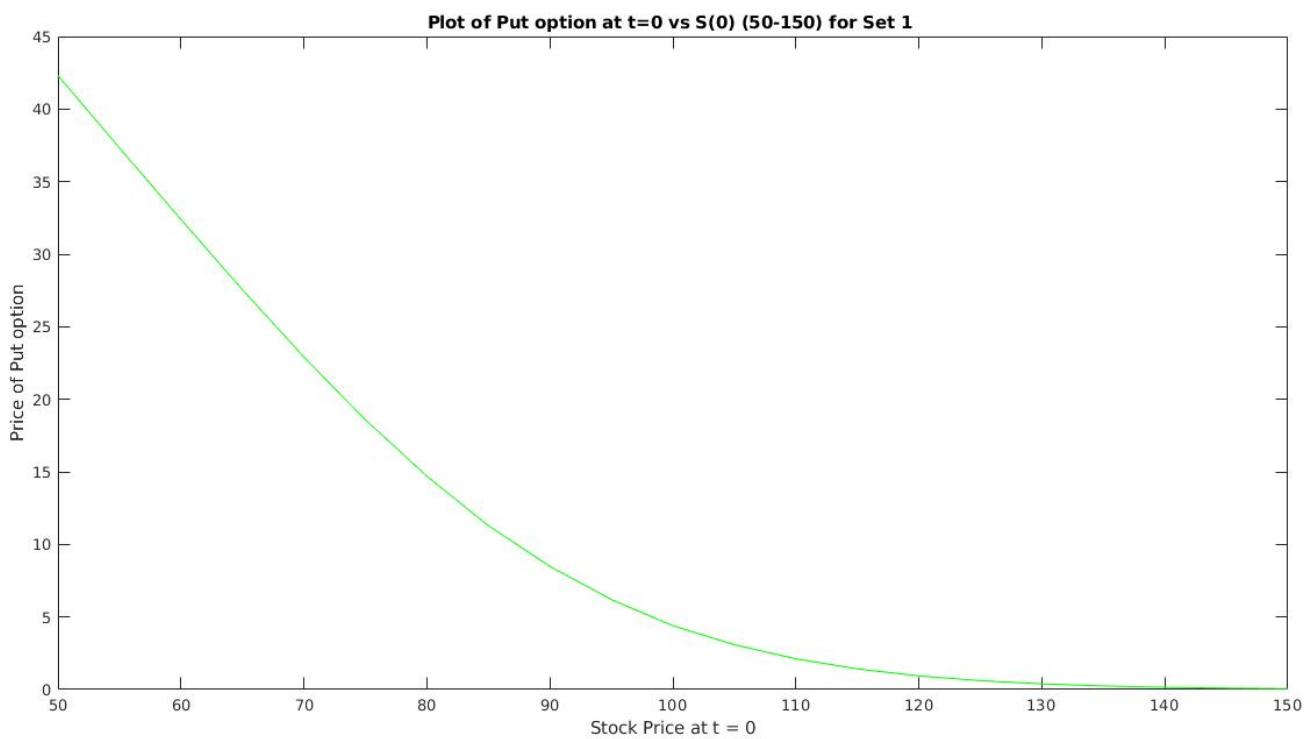
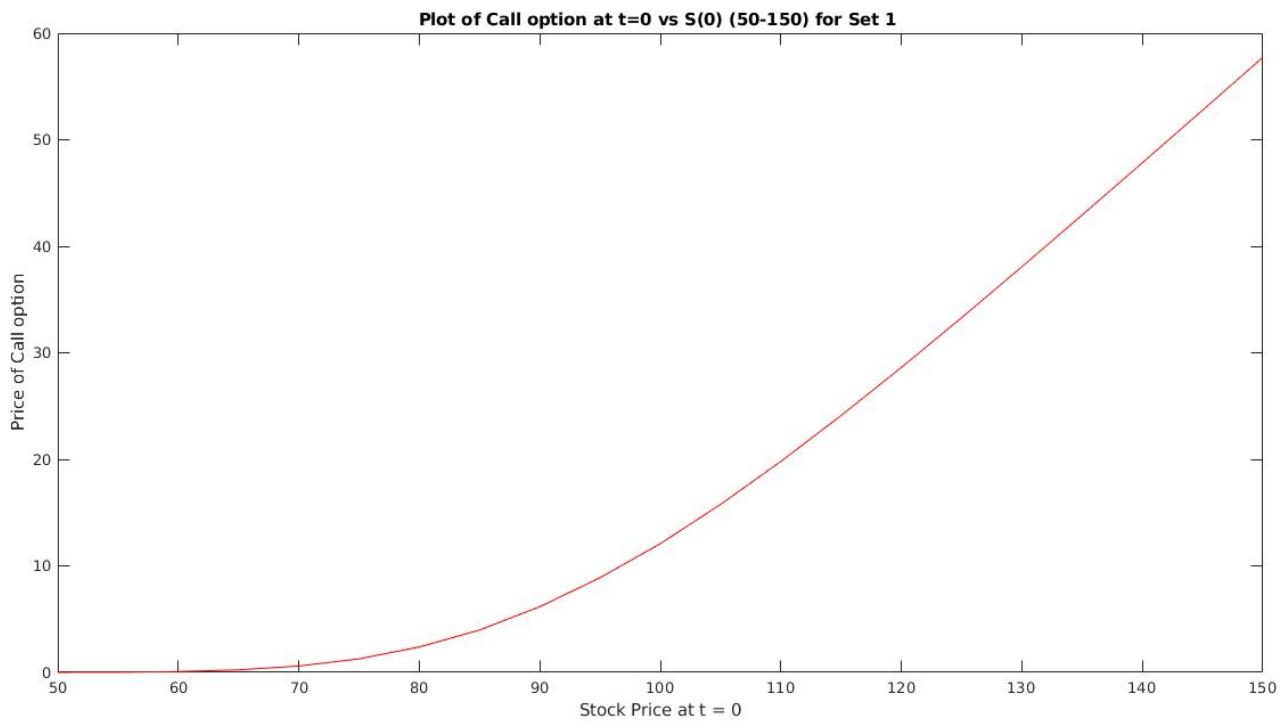
$$S(0) = 100; K = 100; T = 1; M = 10; r = 8\%; \sigma = 20\%$$

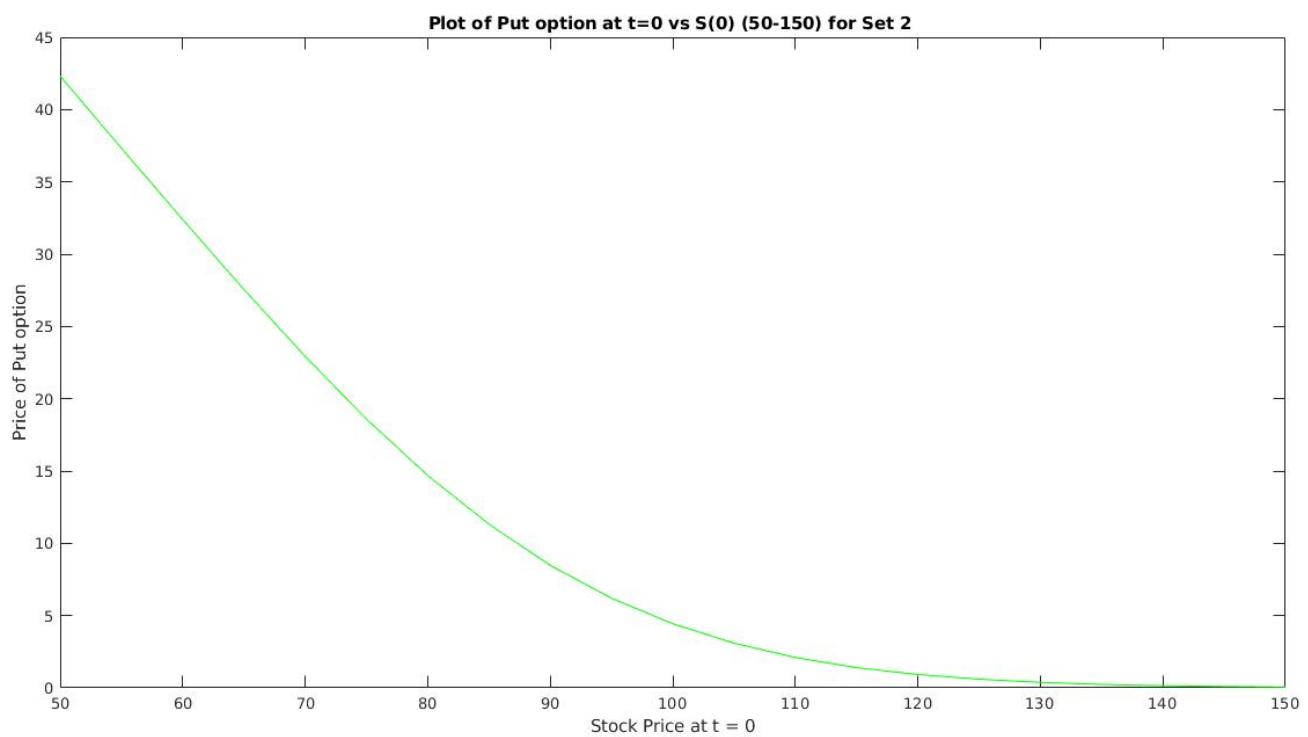
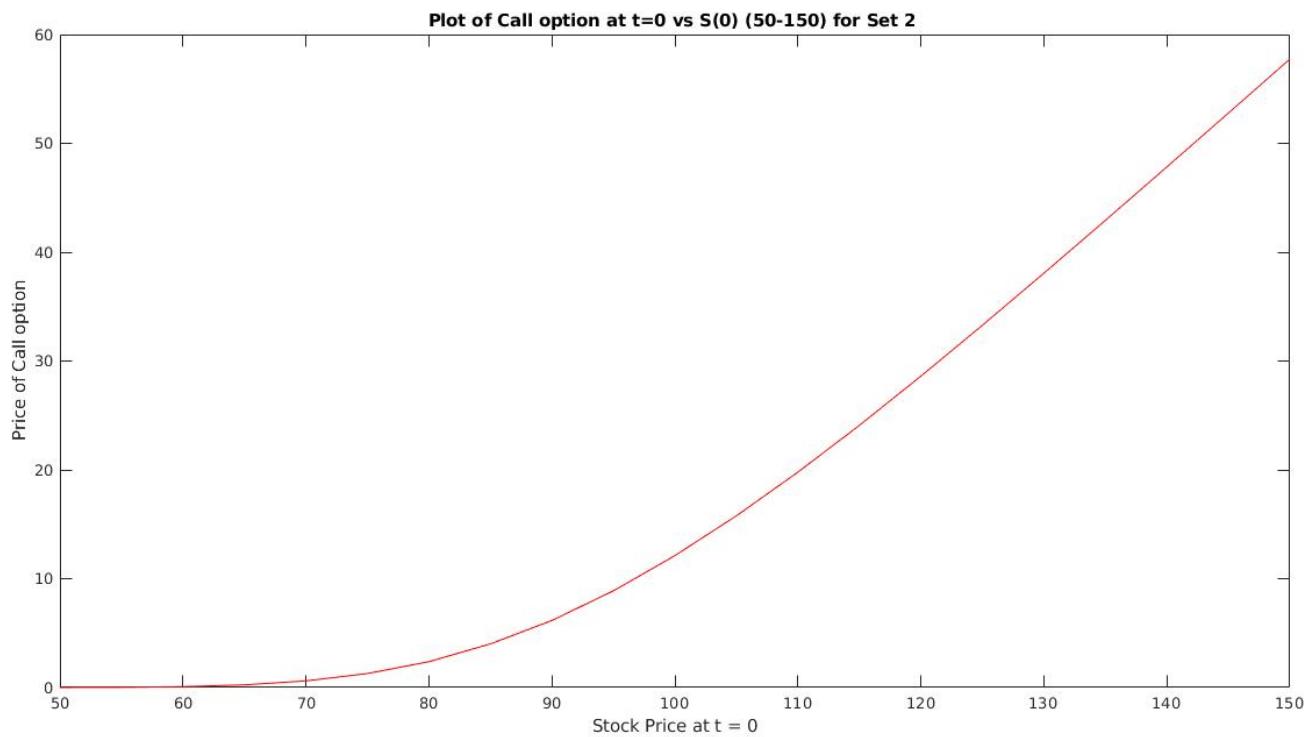
The Asian Call price for set 1 is - 6.4760

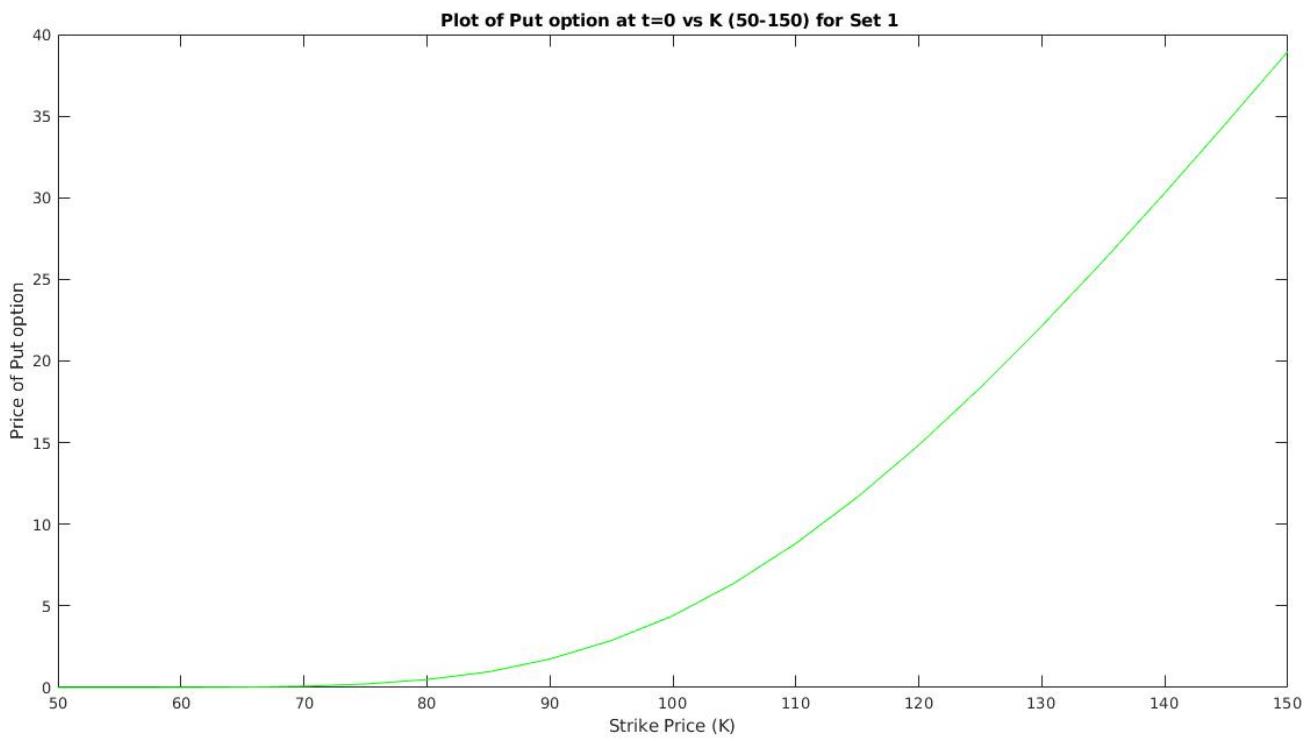
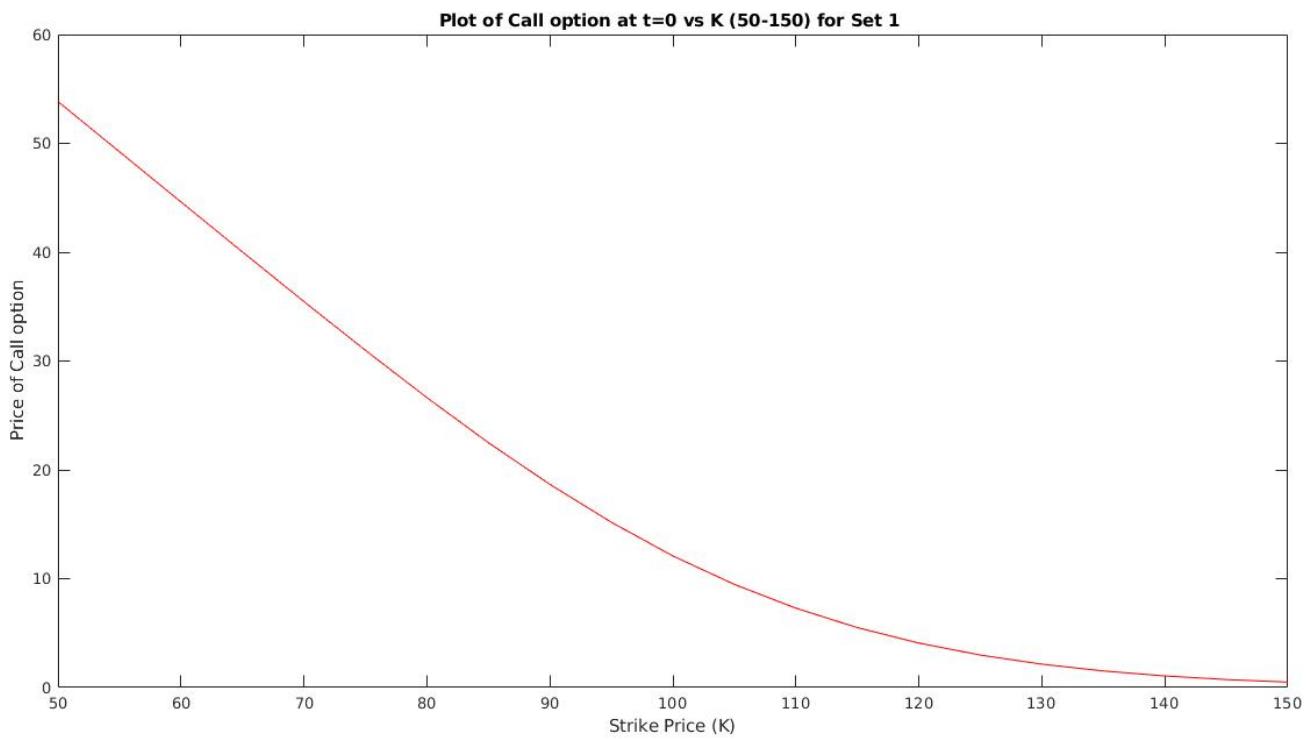
The Asian Put price for set 1 is - 2.6779

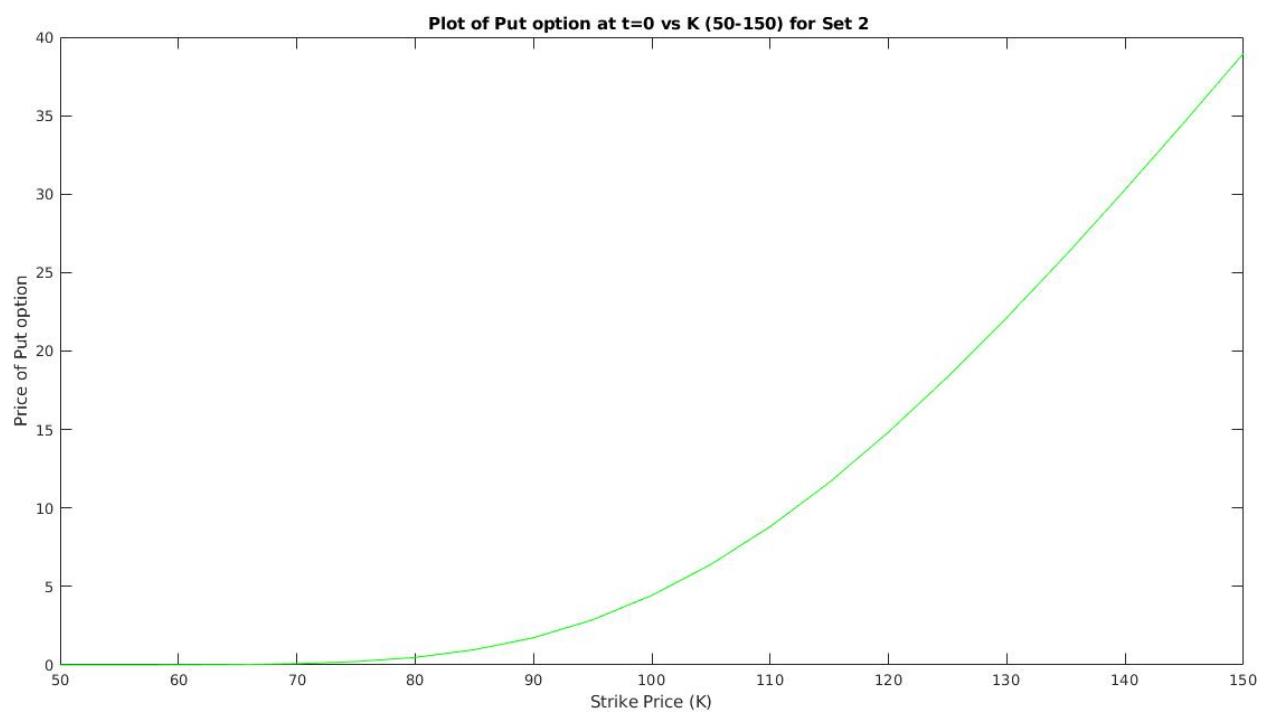
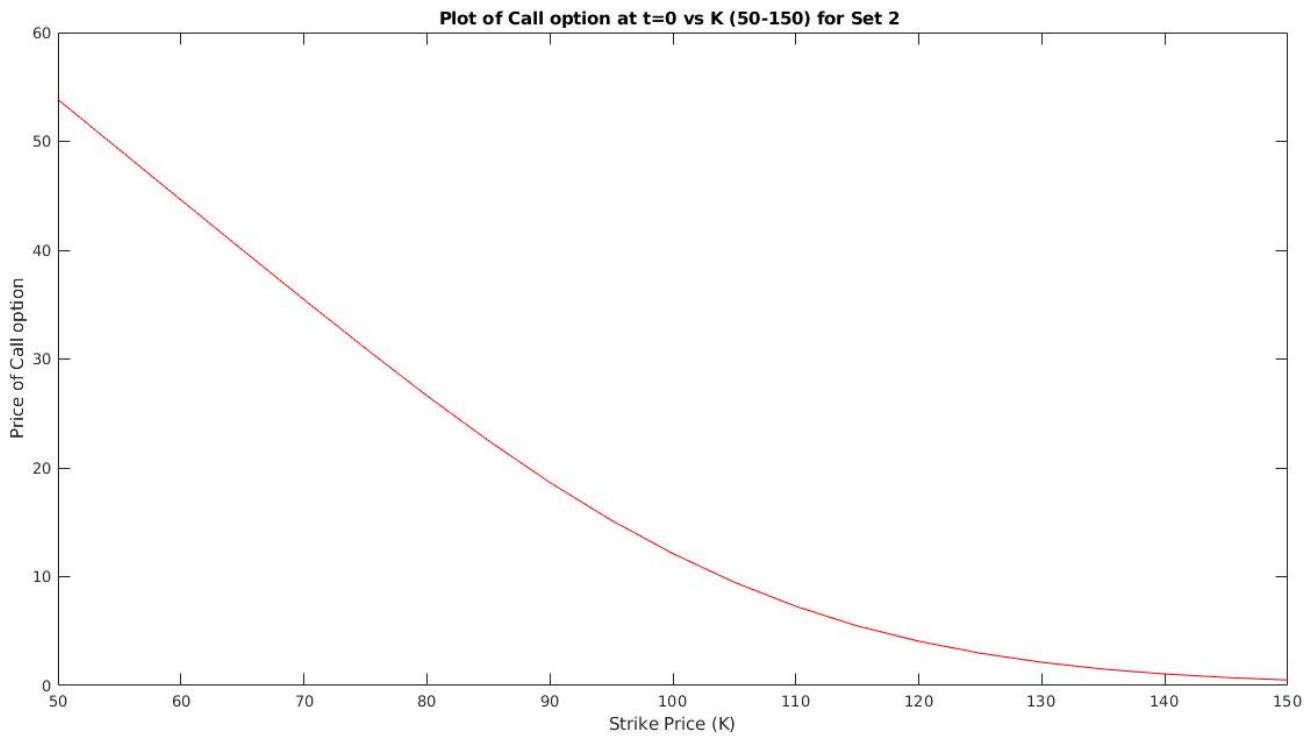
Sensitivity Analysis of option price variance with $S(0)$, K , M , r , σ are done by plotting 2-D and 3-D plots (**Page No. 27 Onwards**).

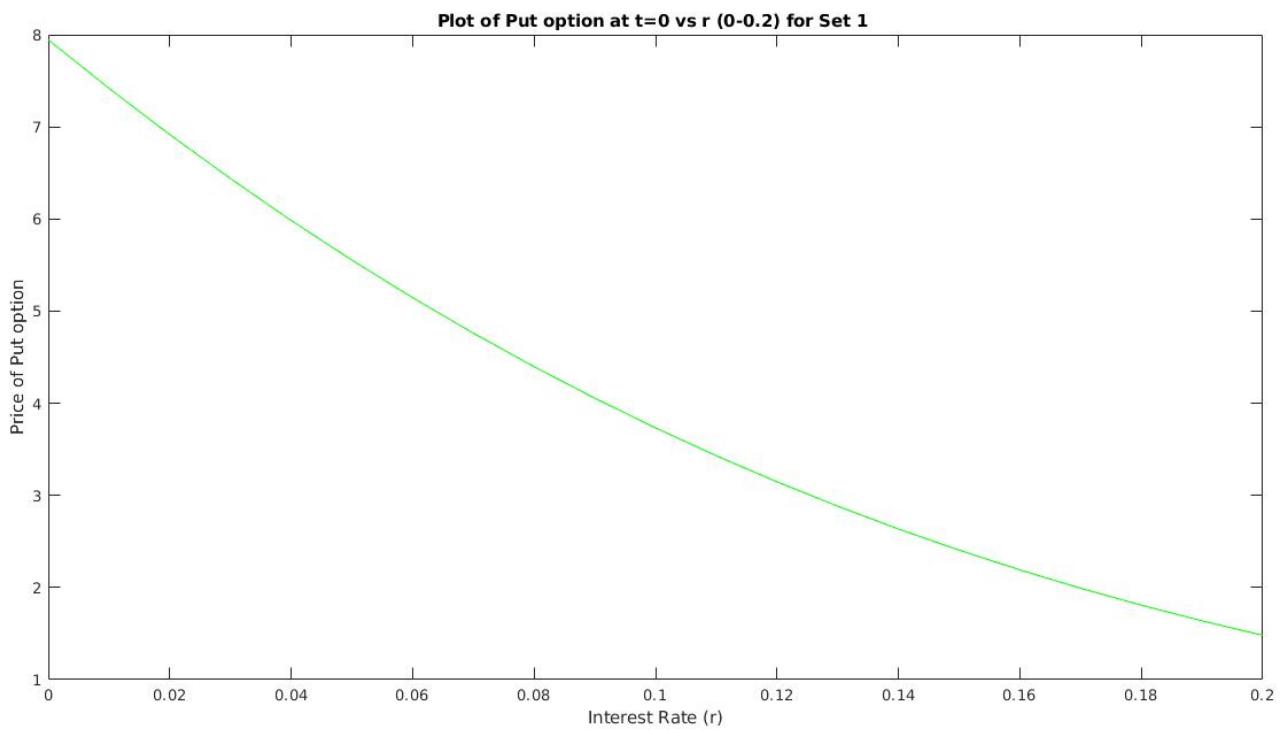
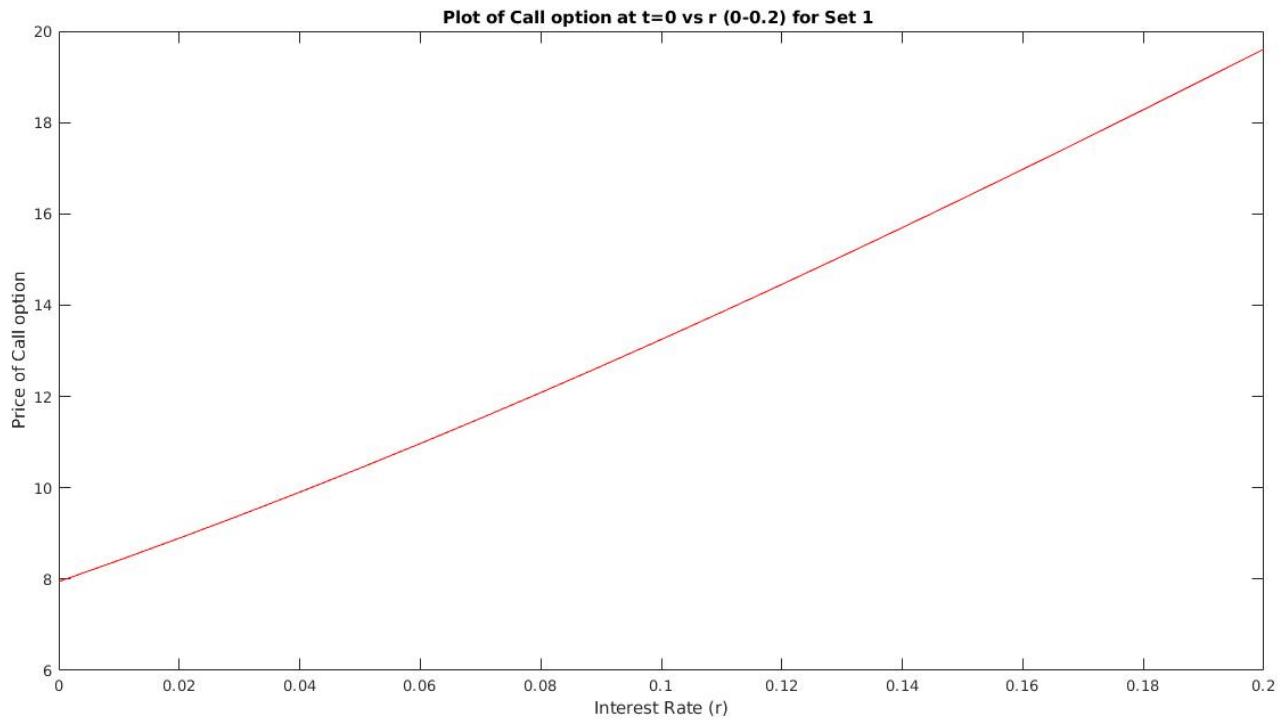
- ◆ Question 1 (Plots)

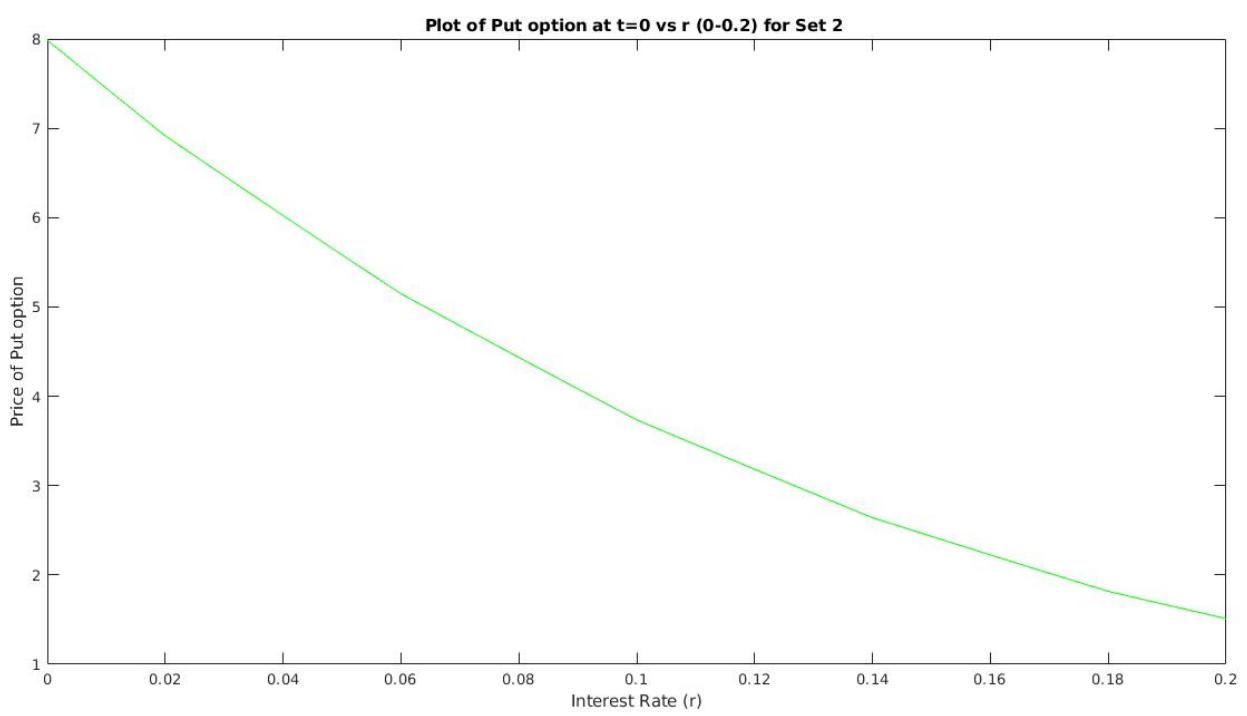
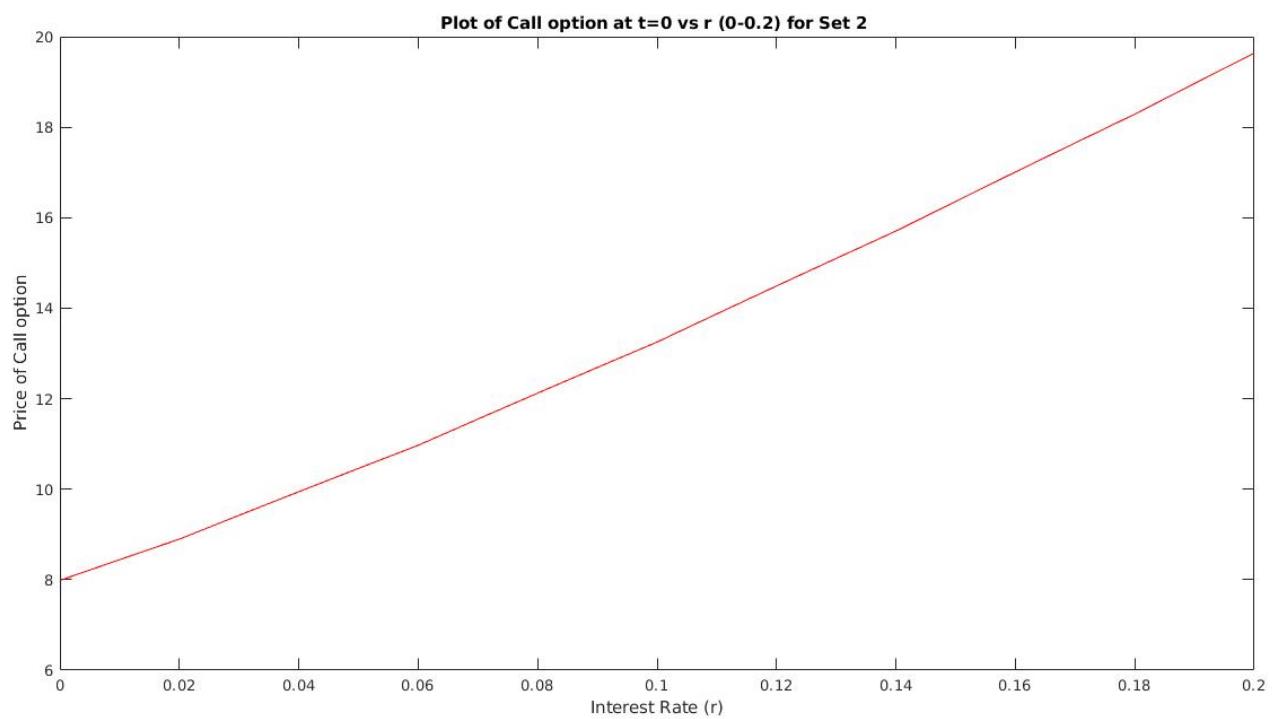


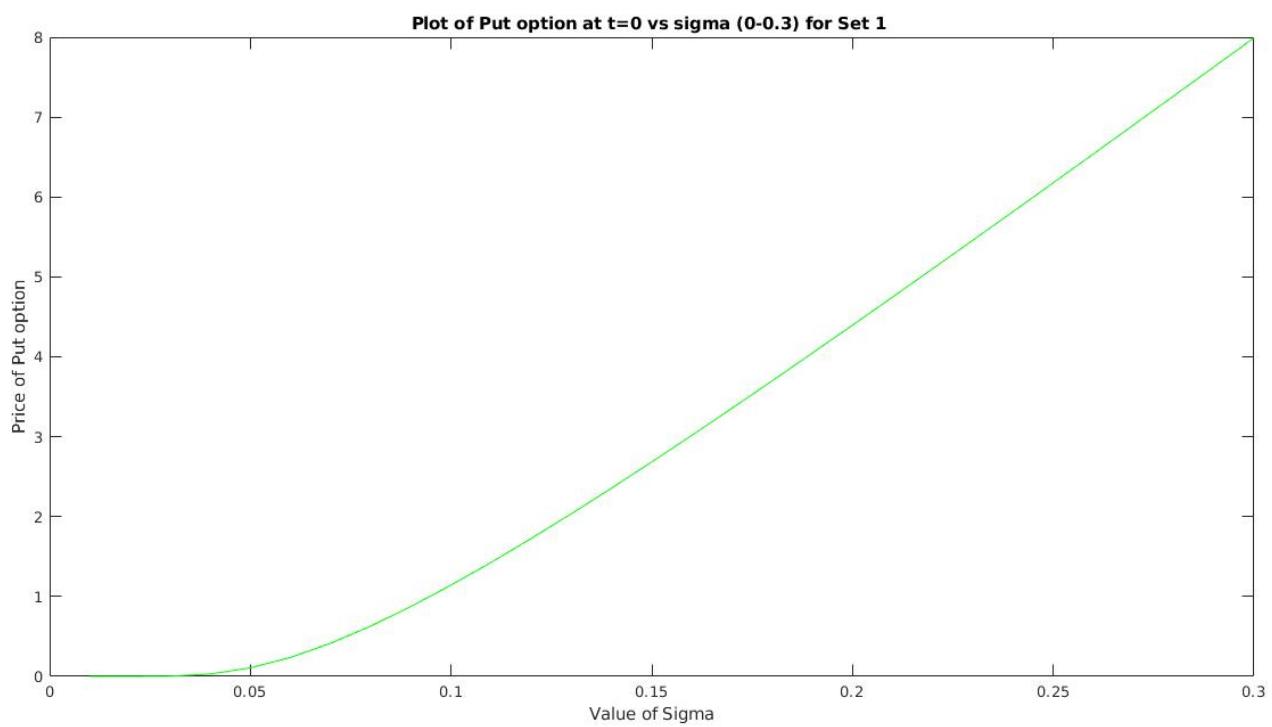
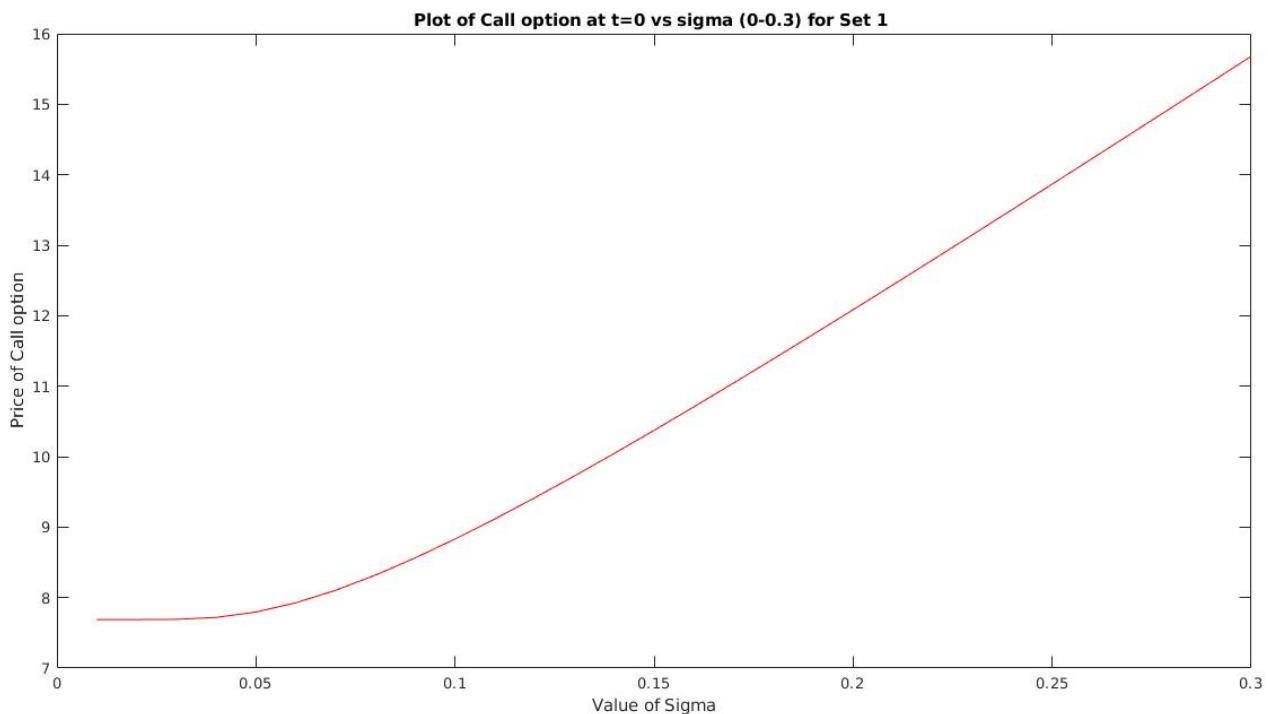


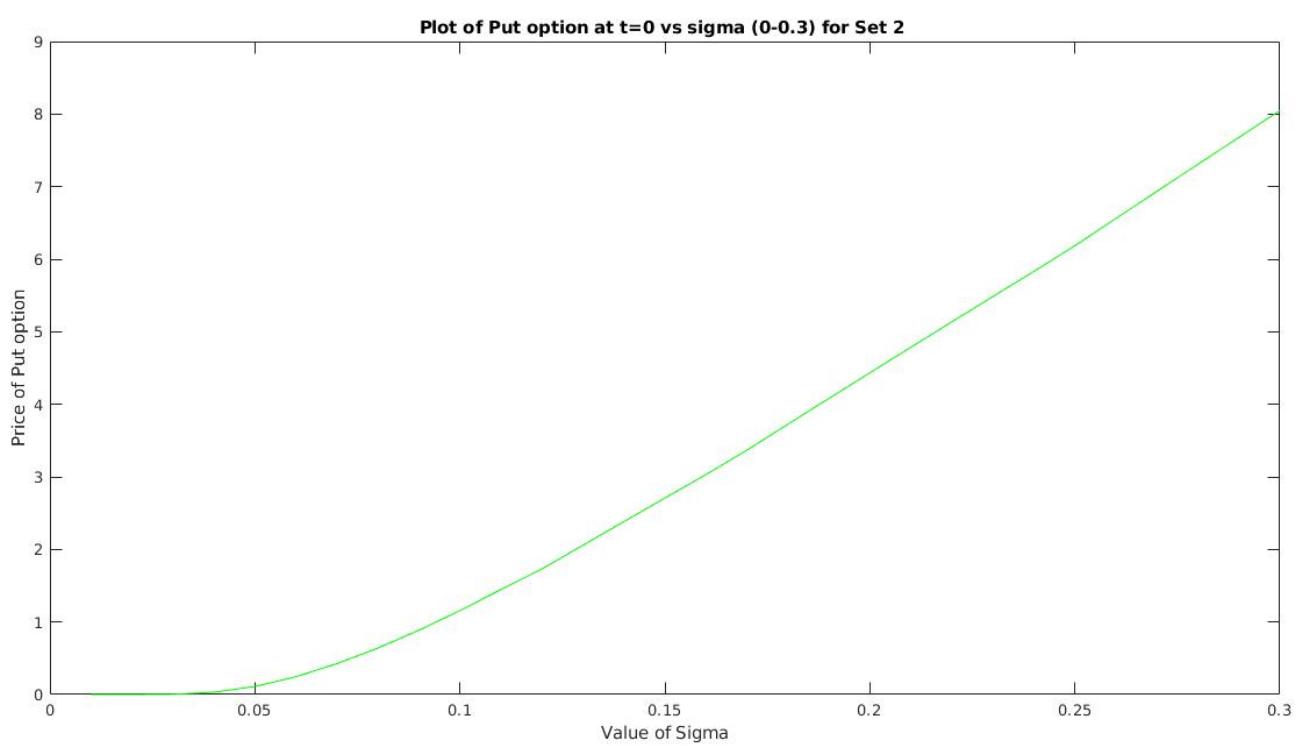
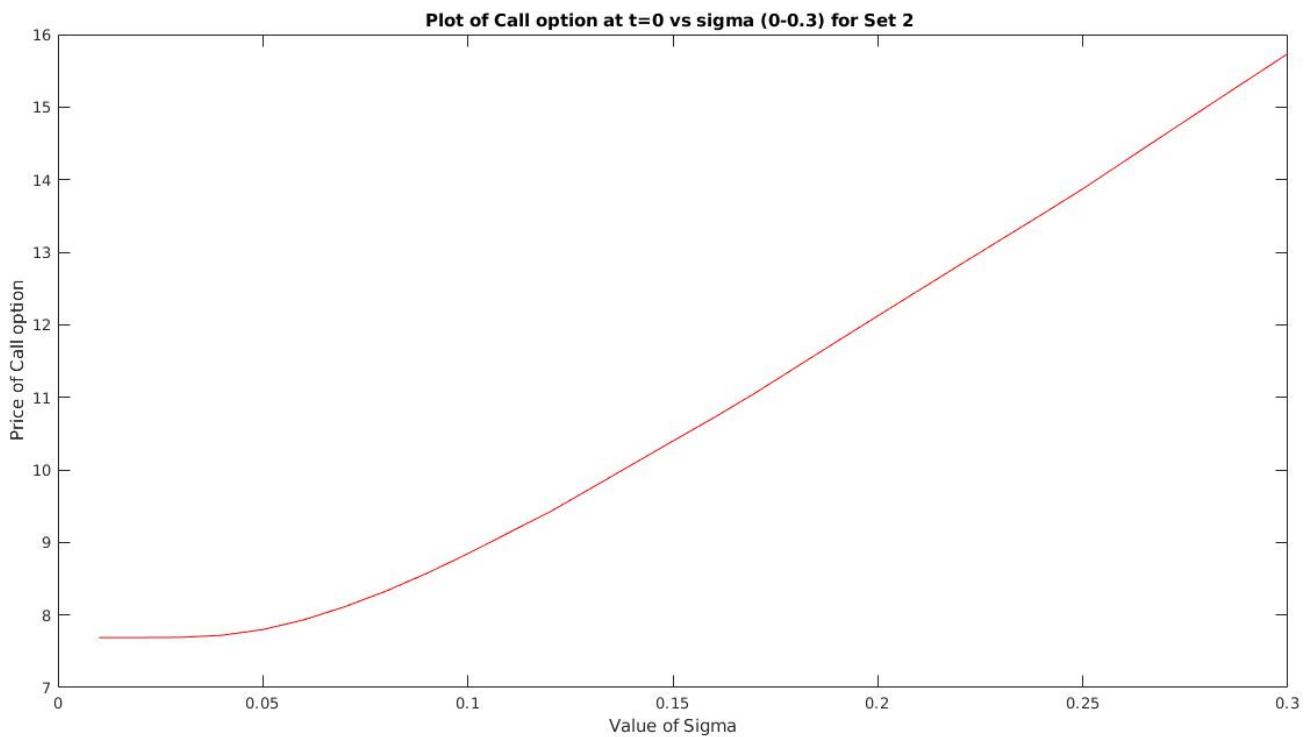


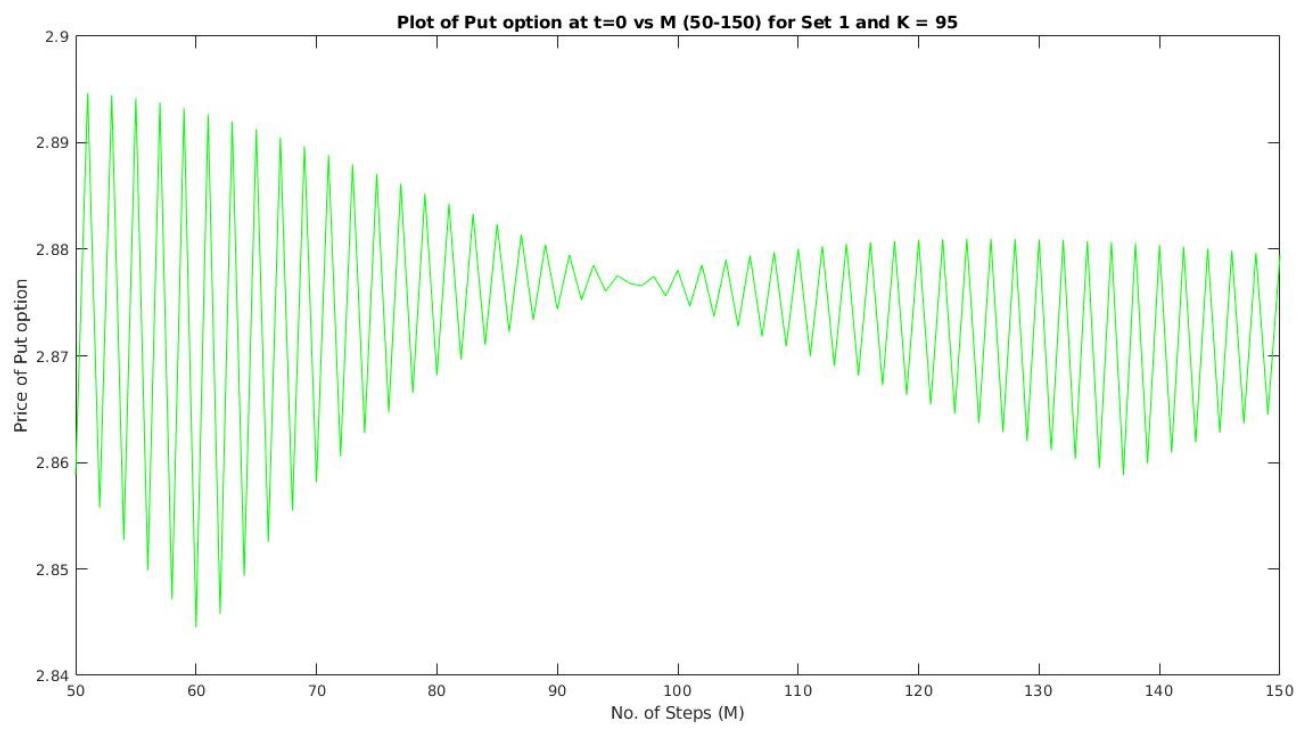
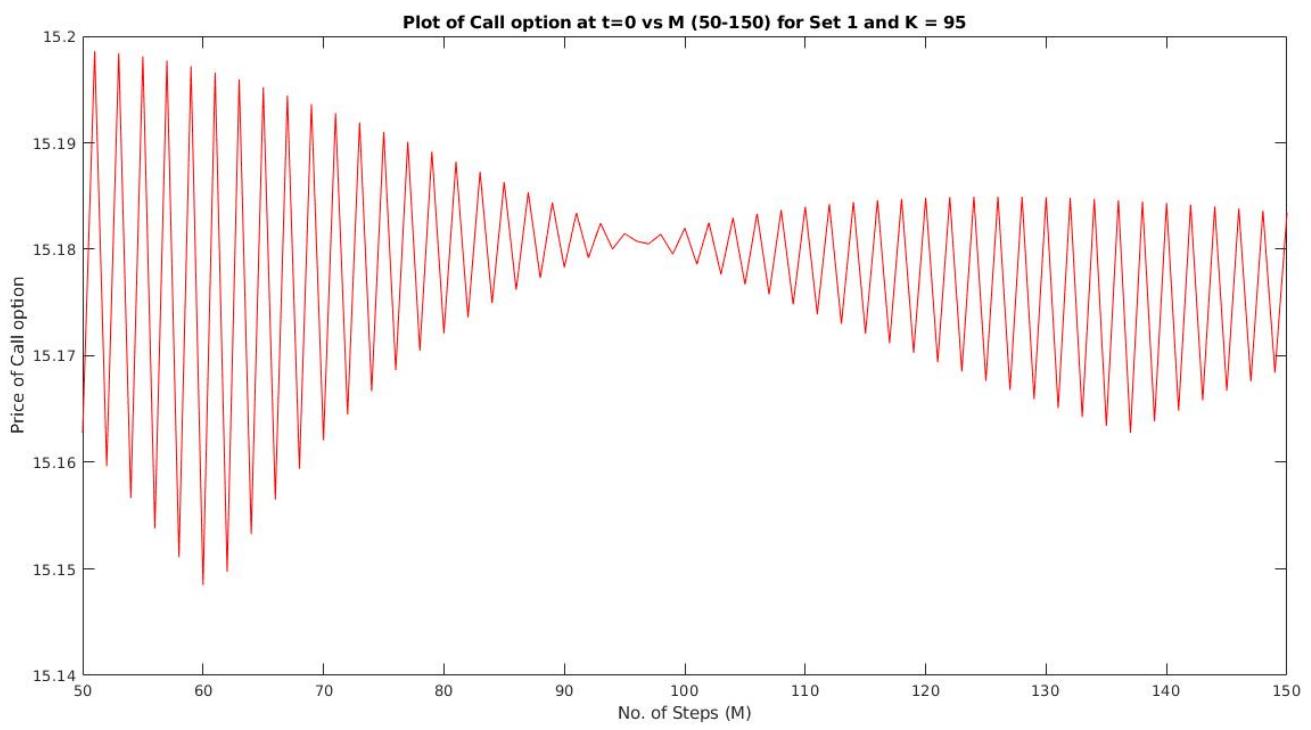


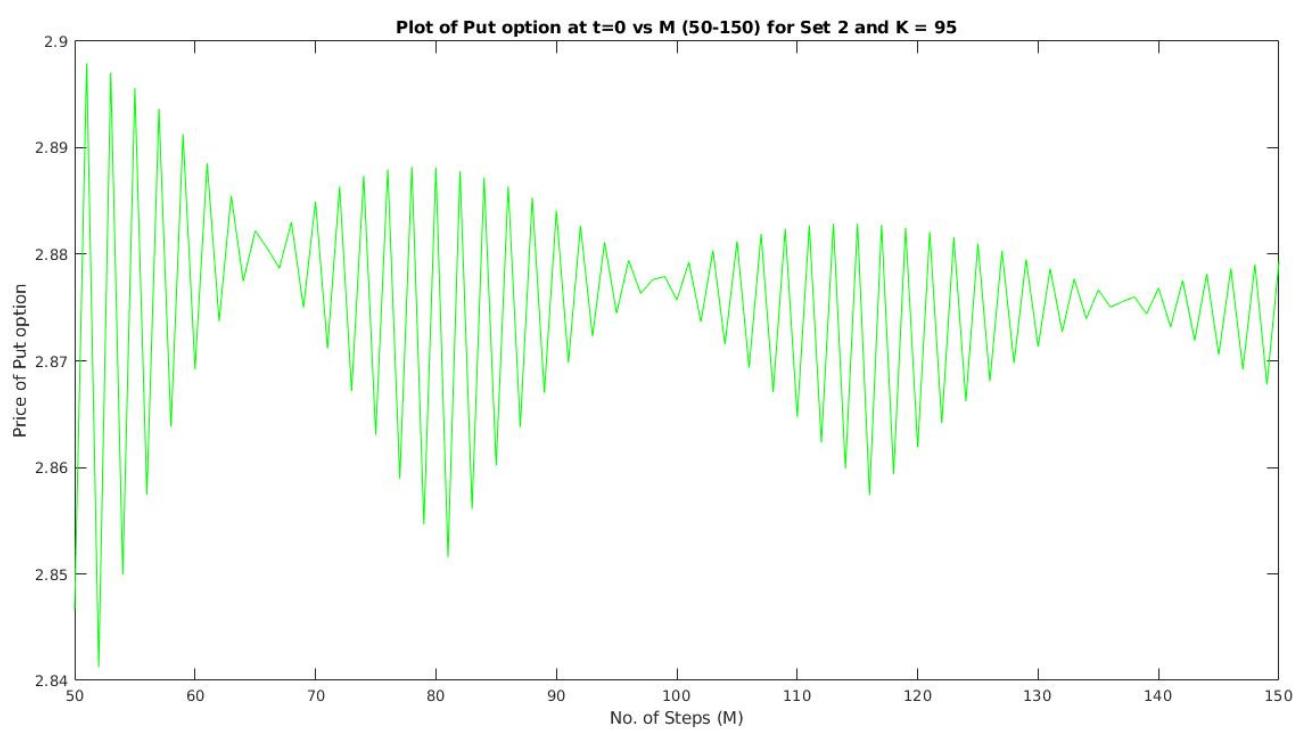
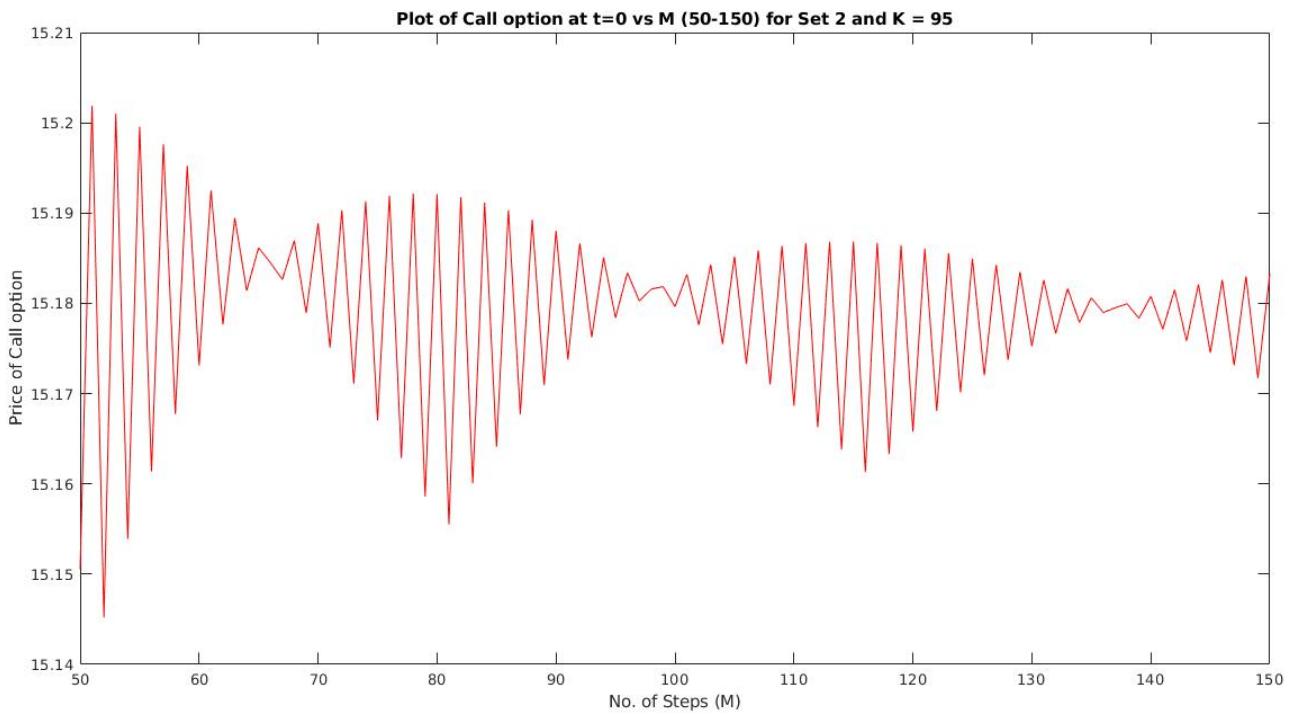


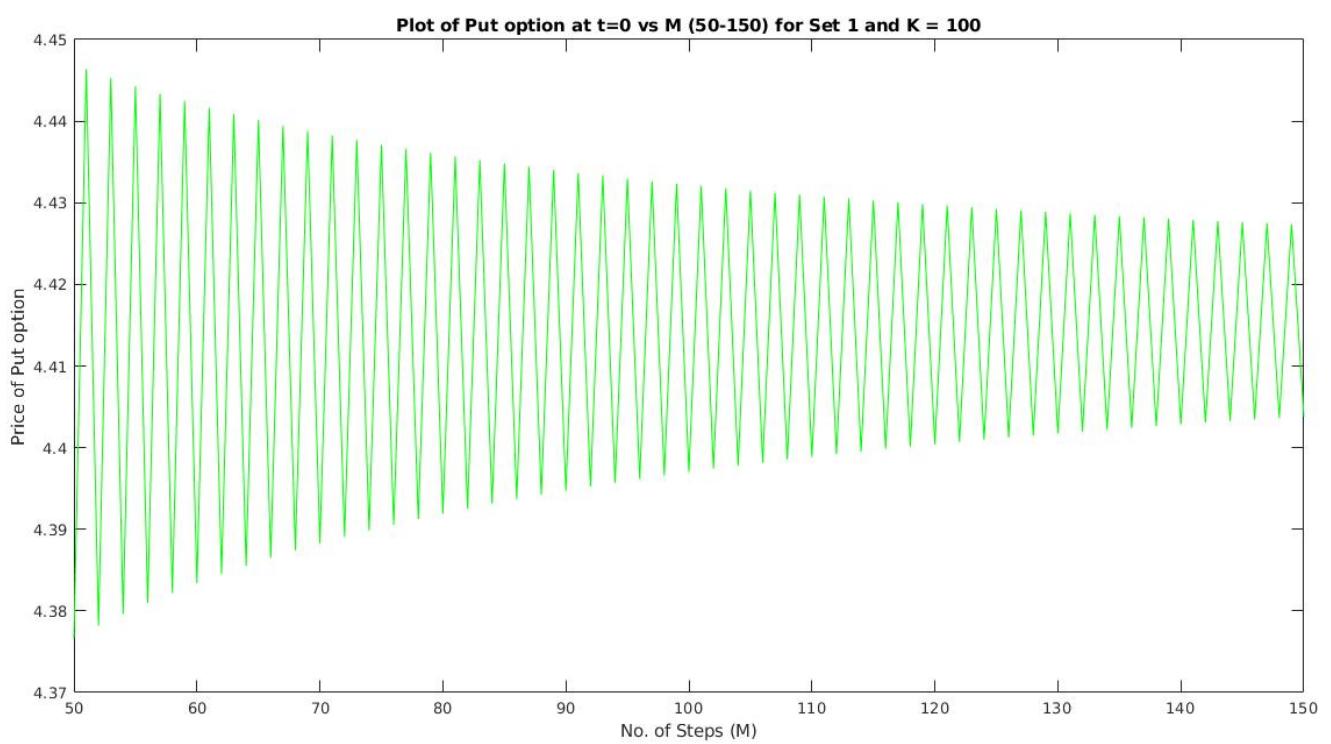
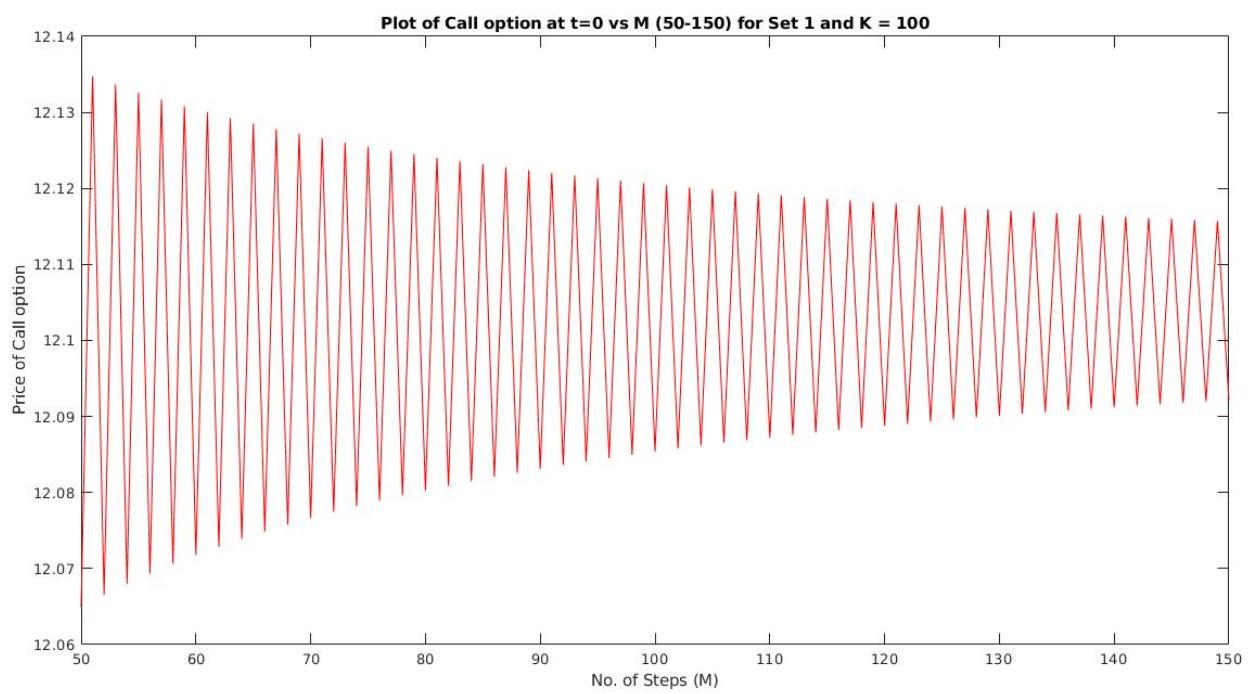


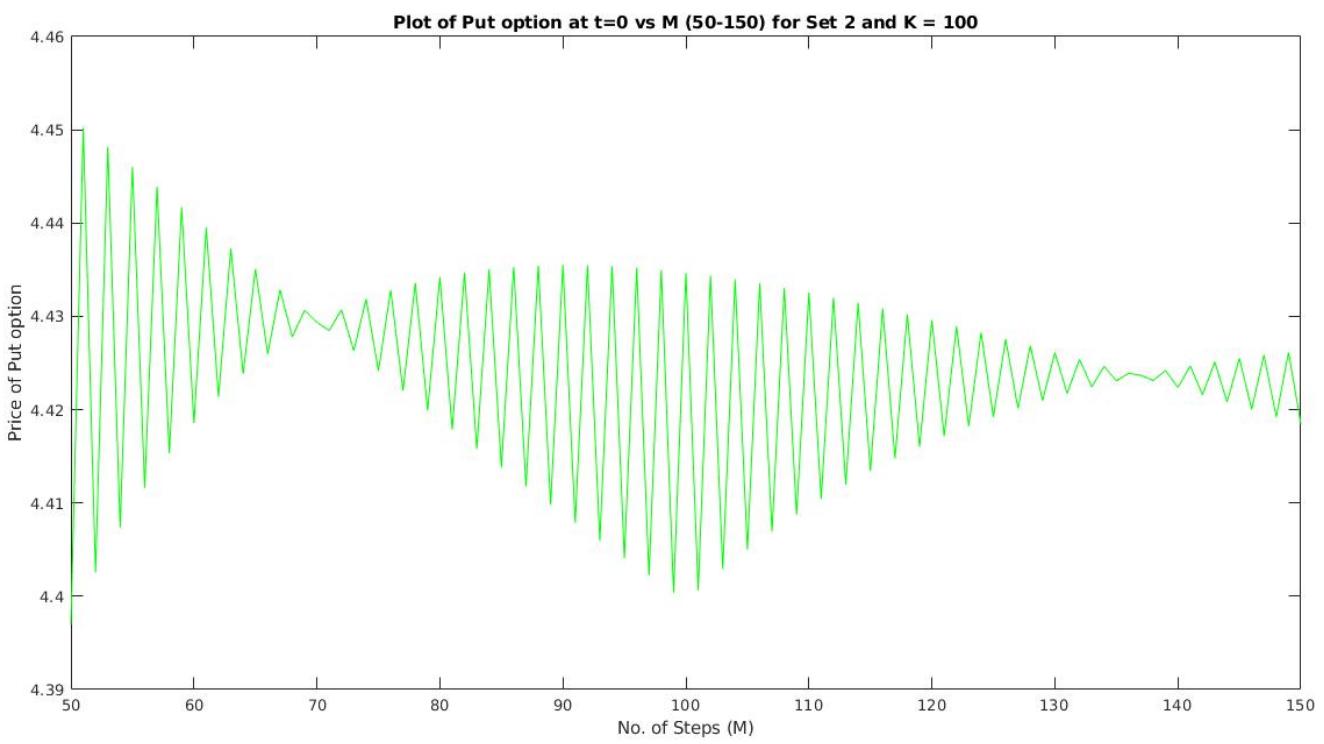
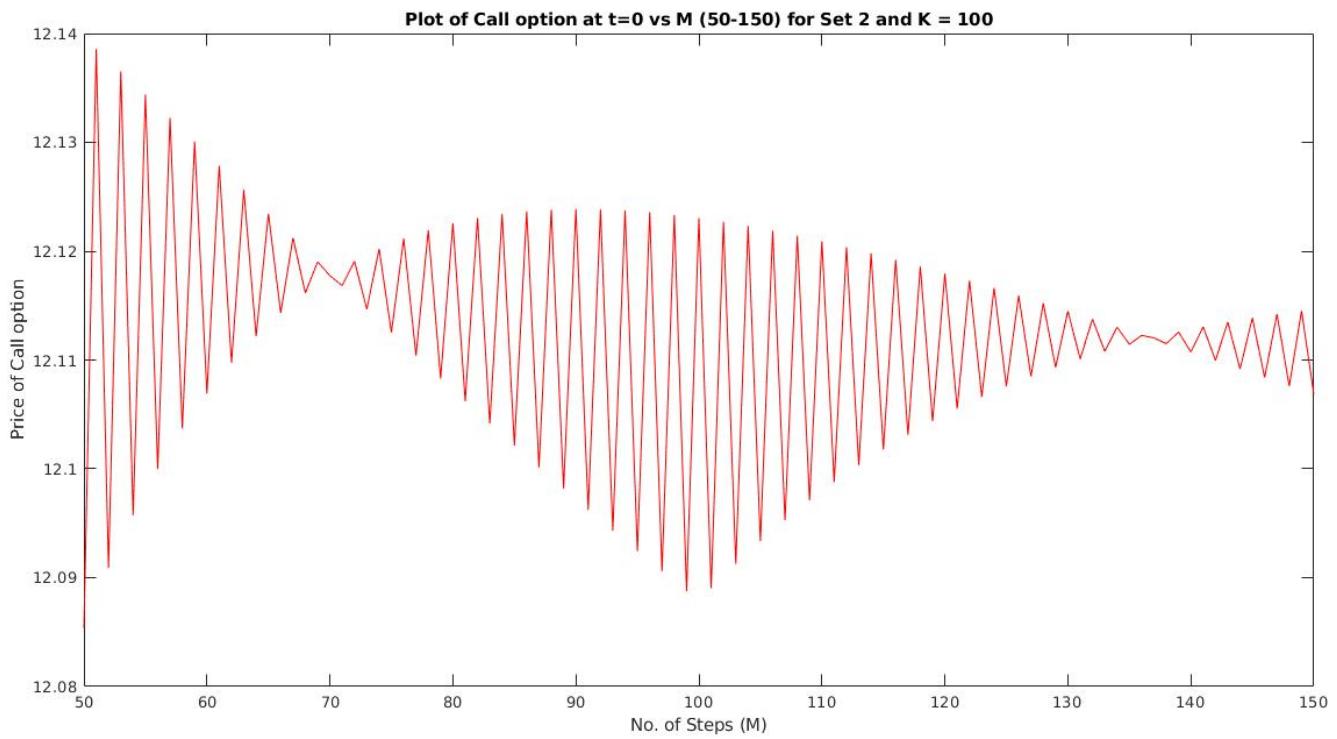


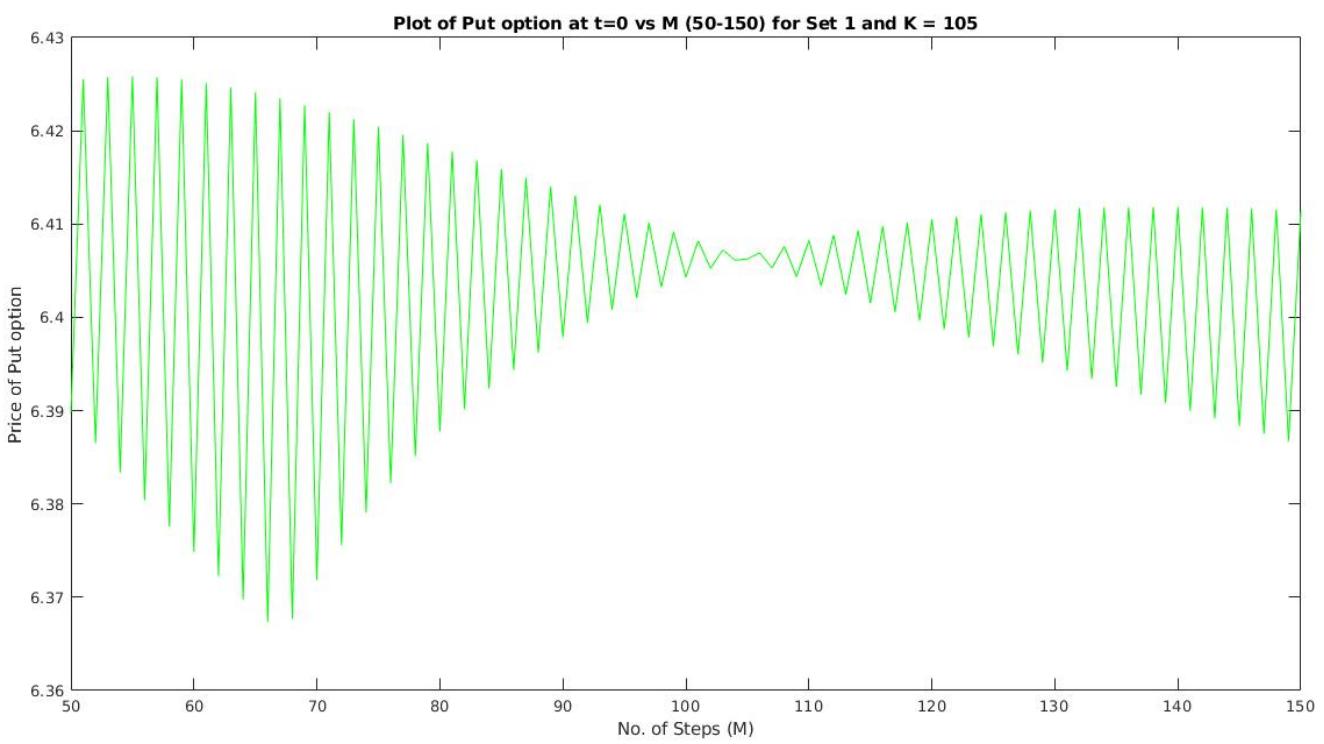
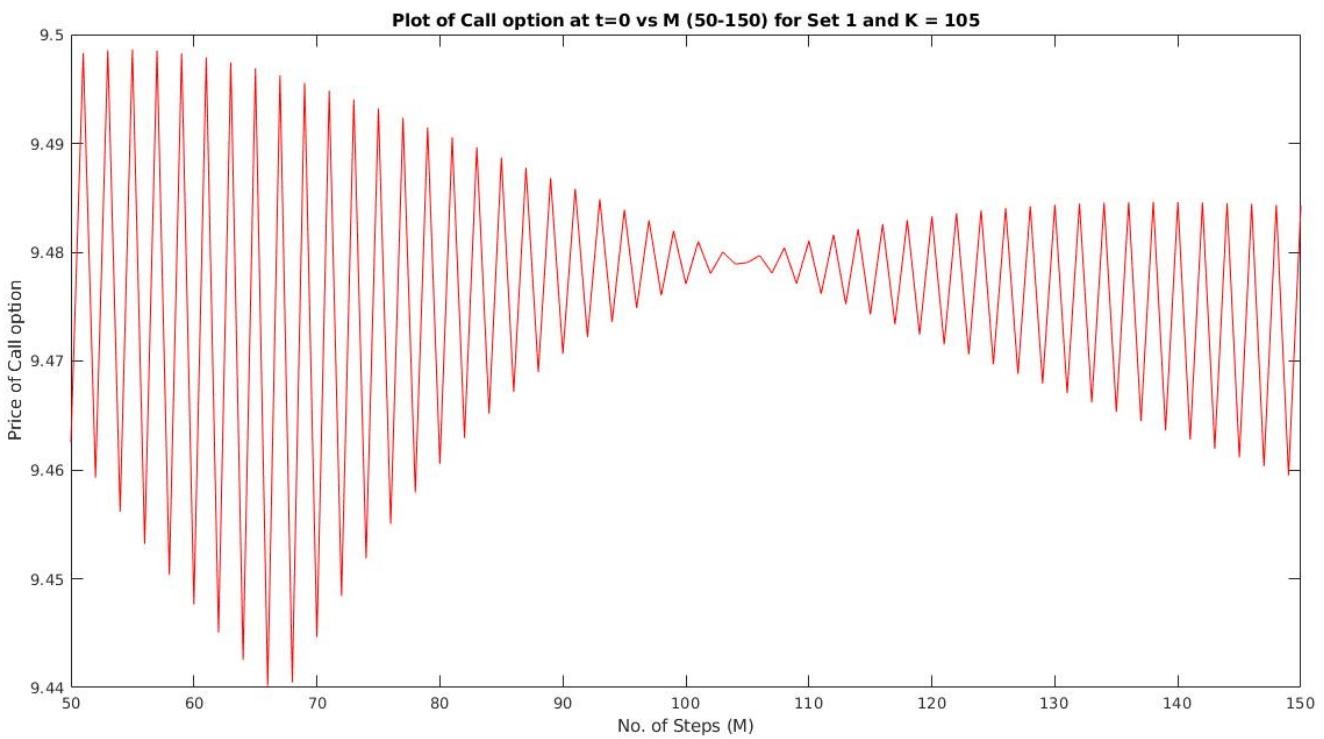


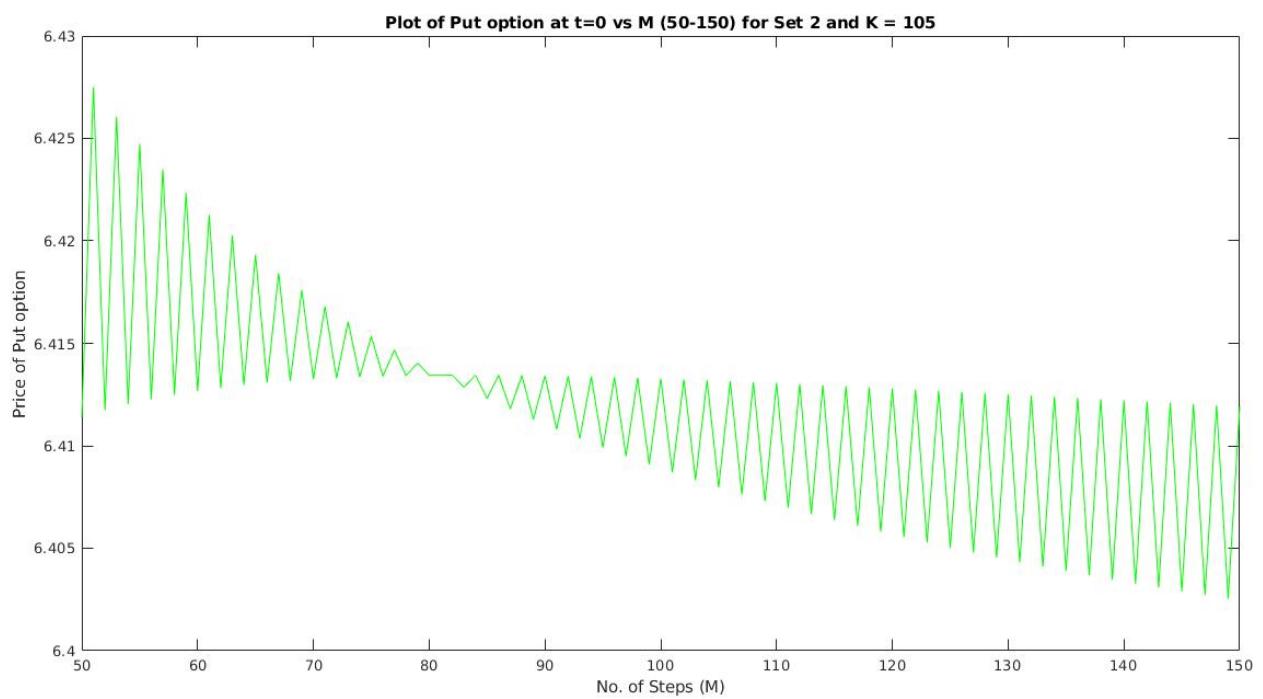
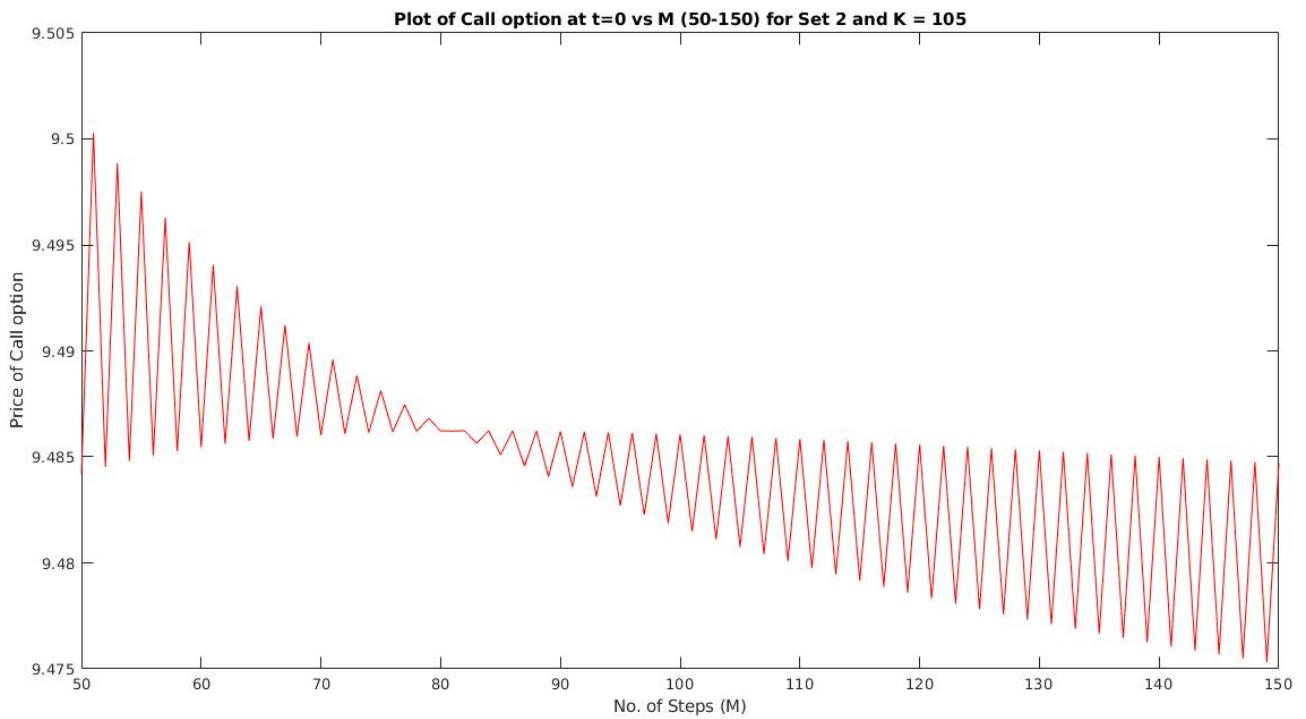




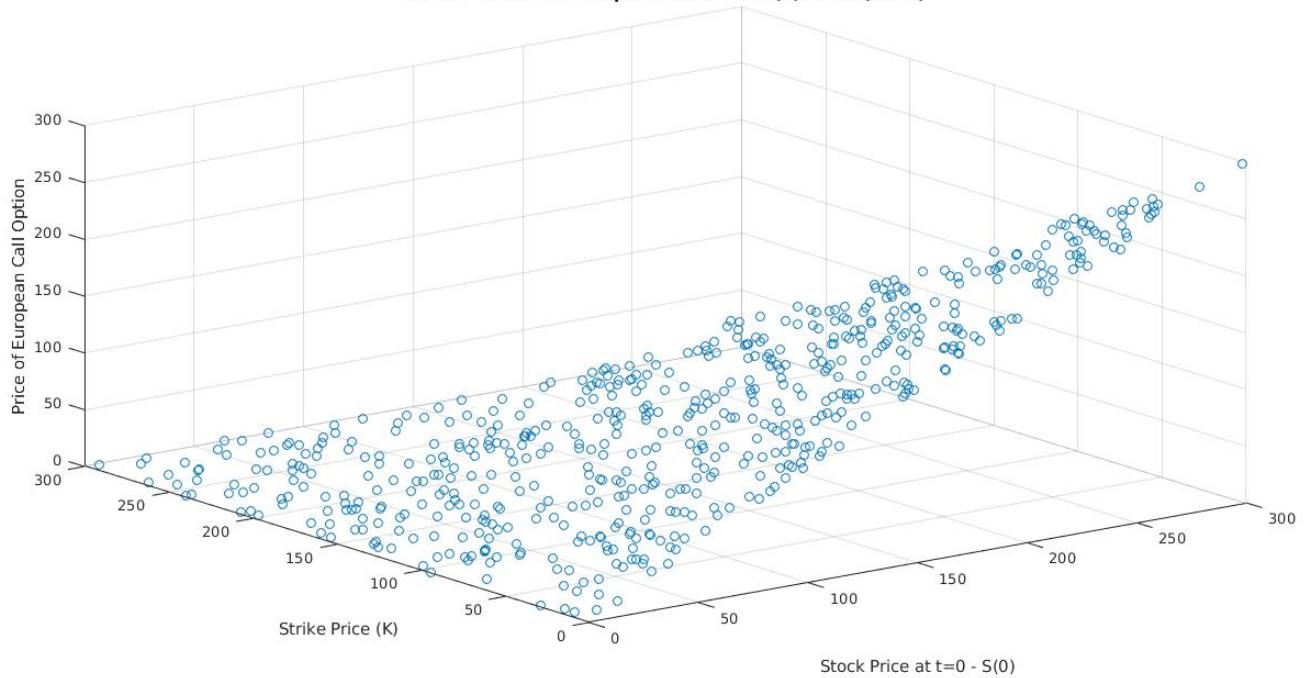




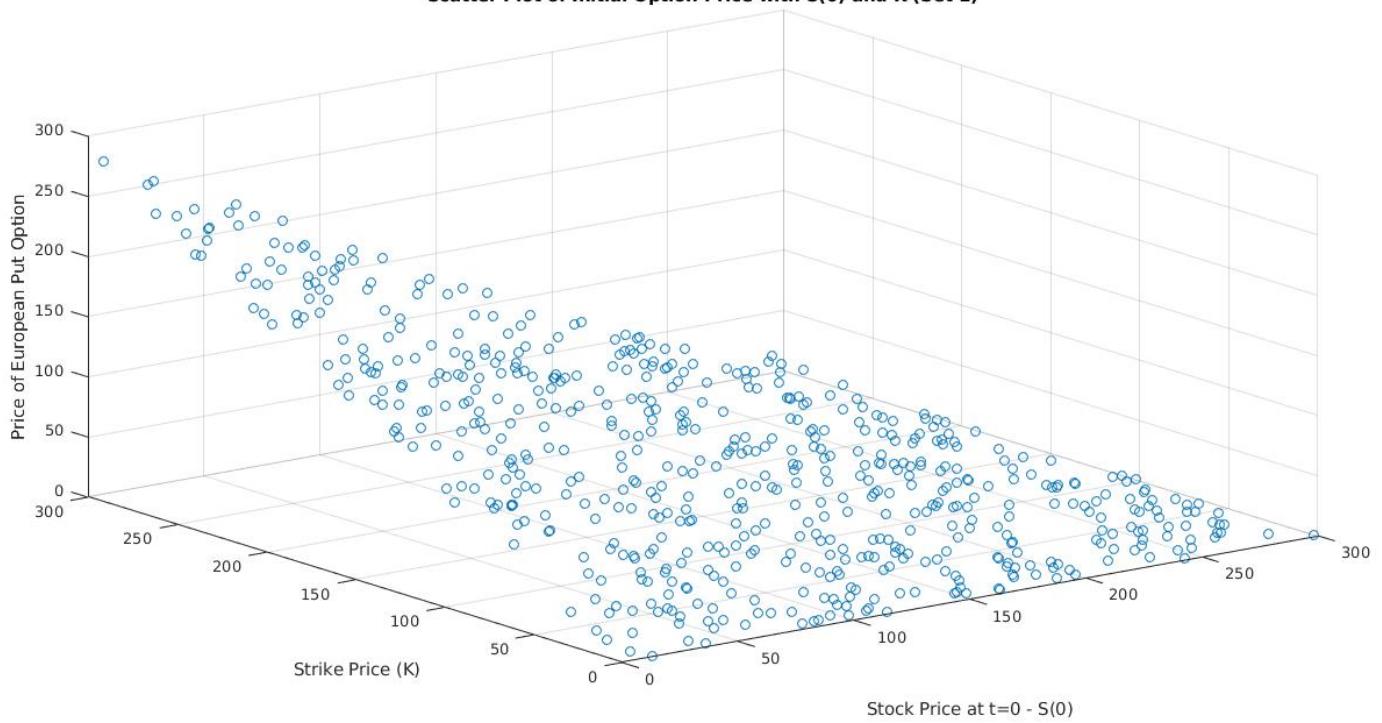


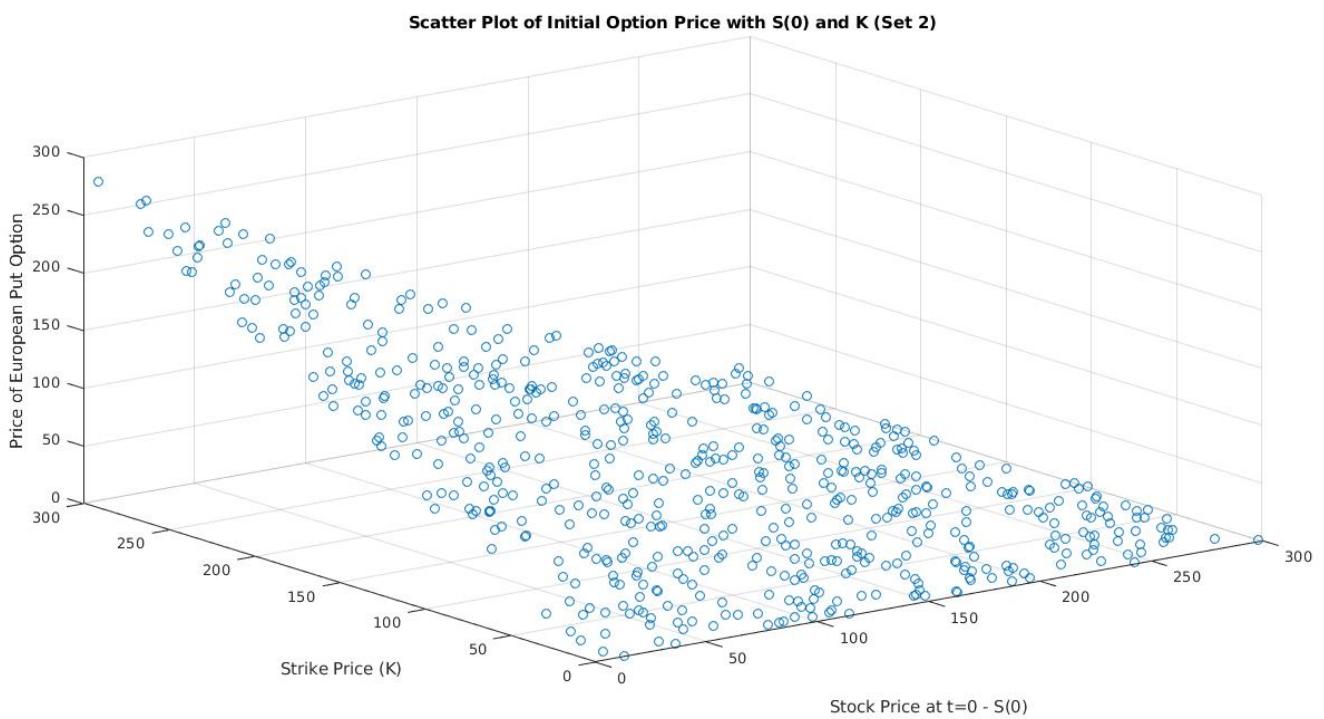
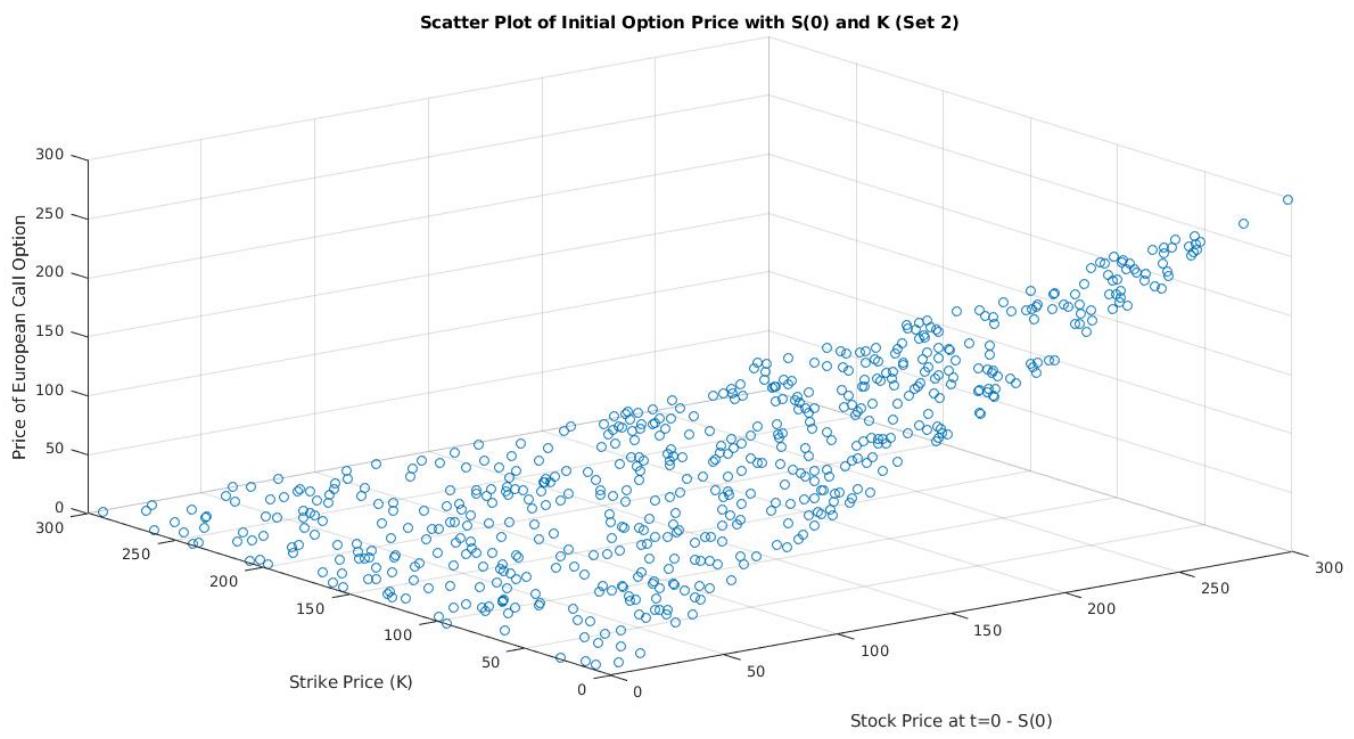


Scatter Plot of Initial Option Price with $S(0)$ and K (Set 1)

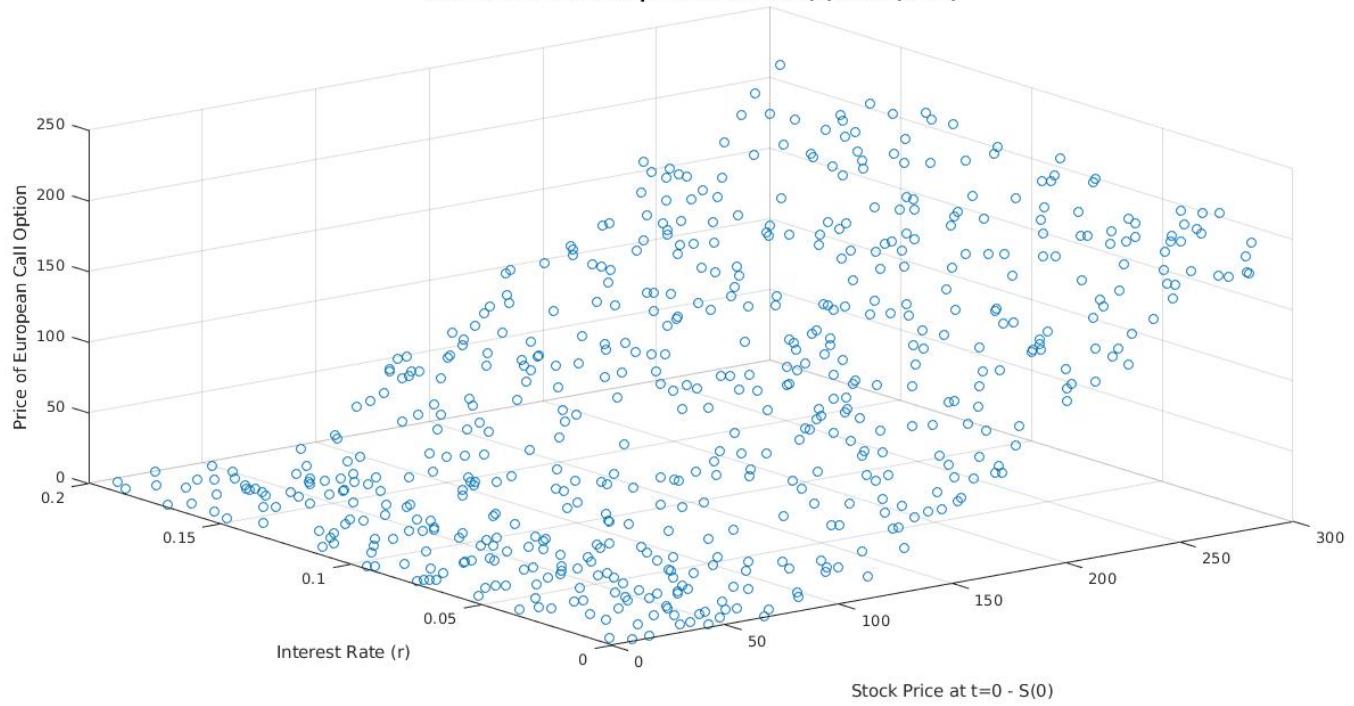


Scatter Plot of Initial Option Price with $S(0)$ and K (Set 1)

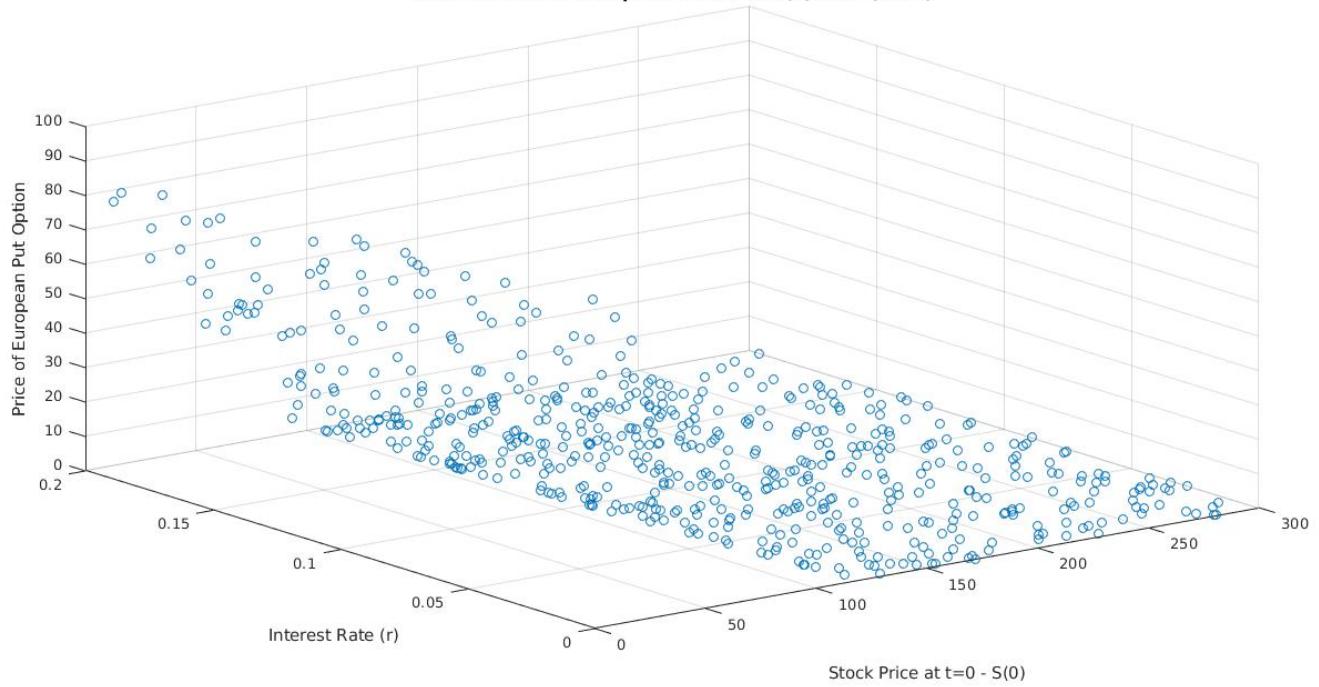




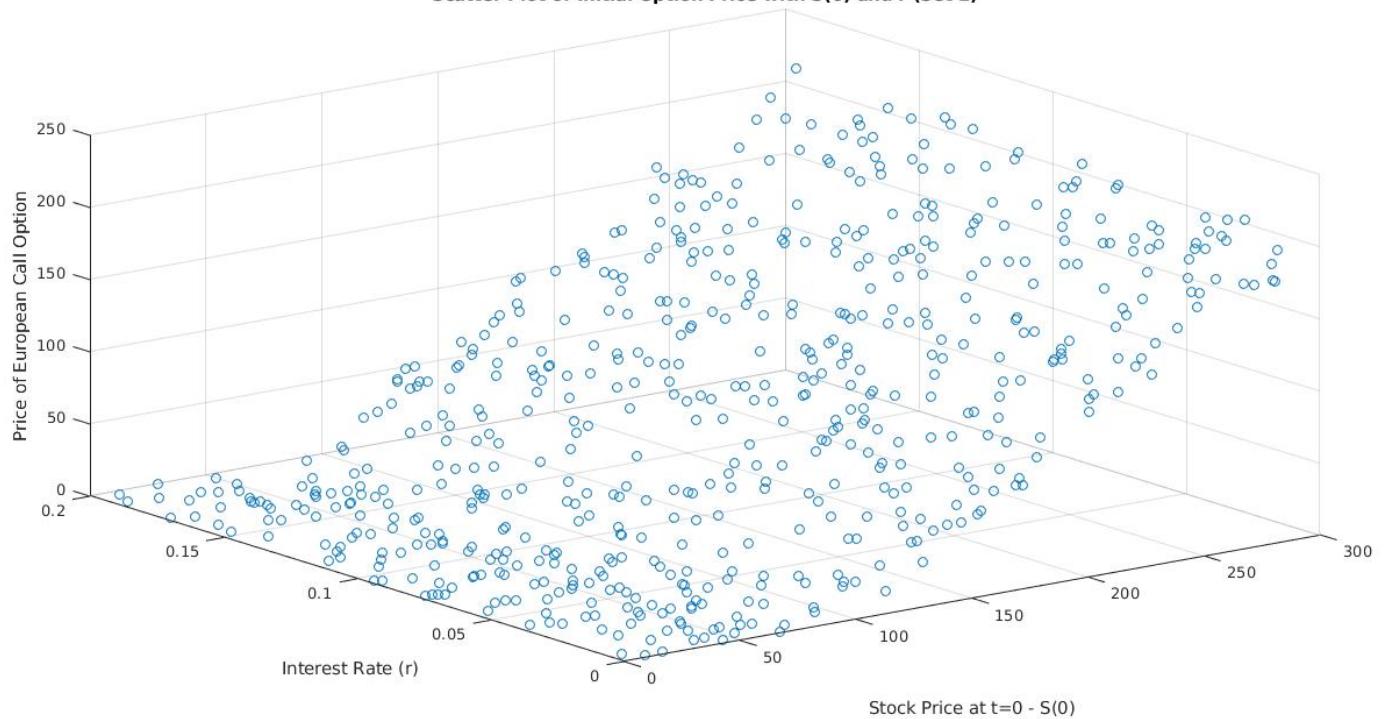
Scatter Plot of Initial Option Price with $S(0)$ and r (Set 1)



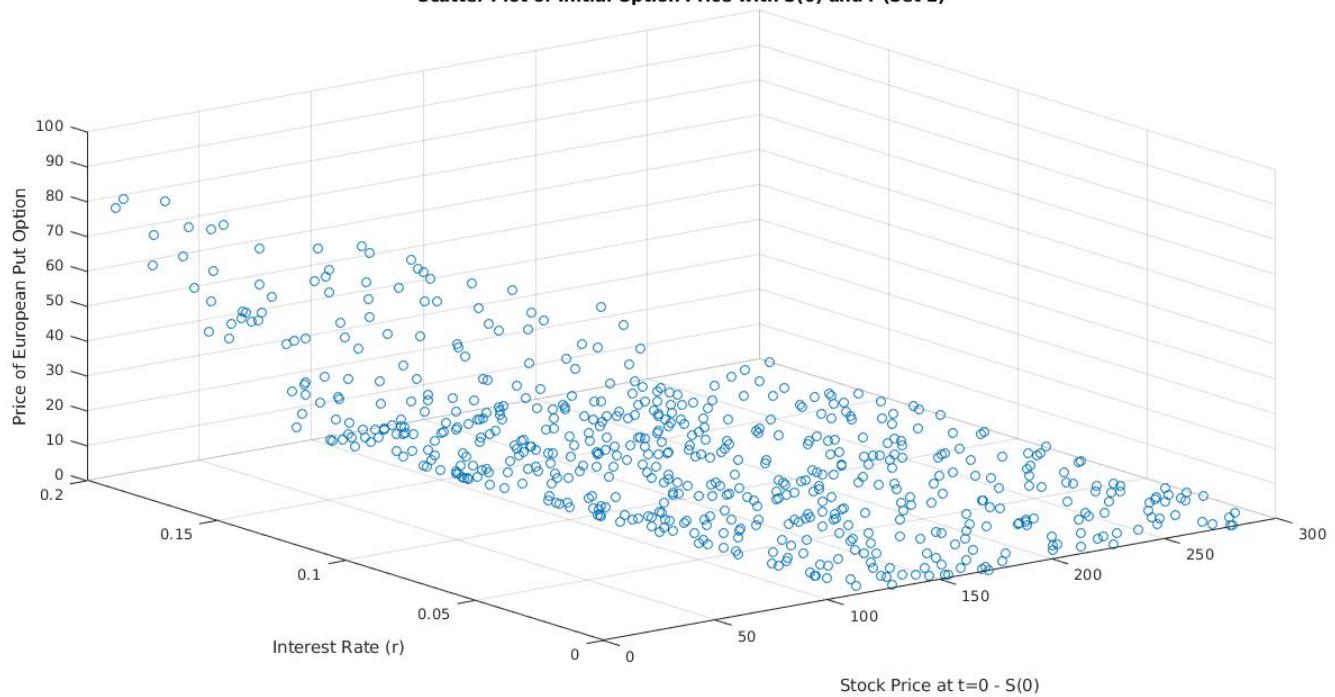
Scatter Plot of Initial Option Price with $S(0)$ and r (Set 1)



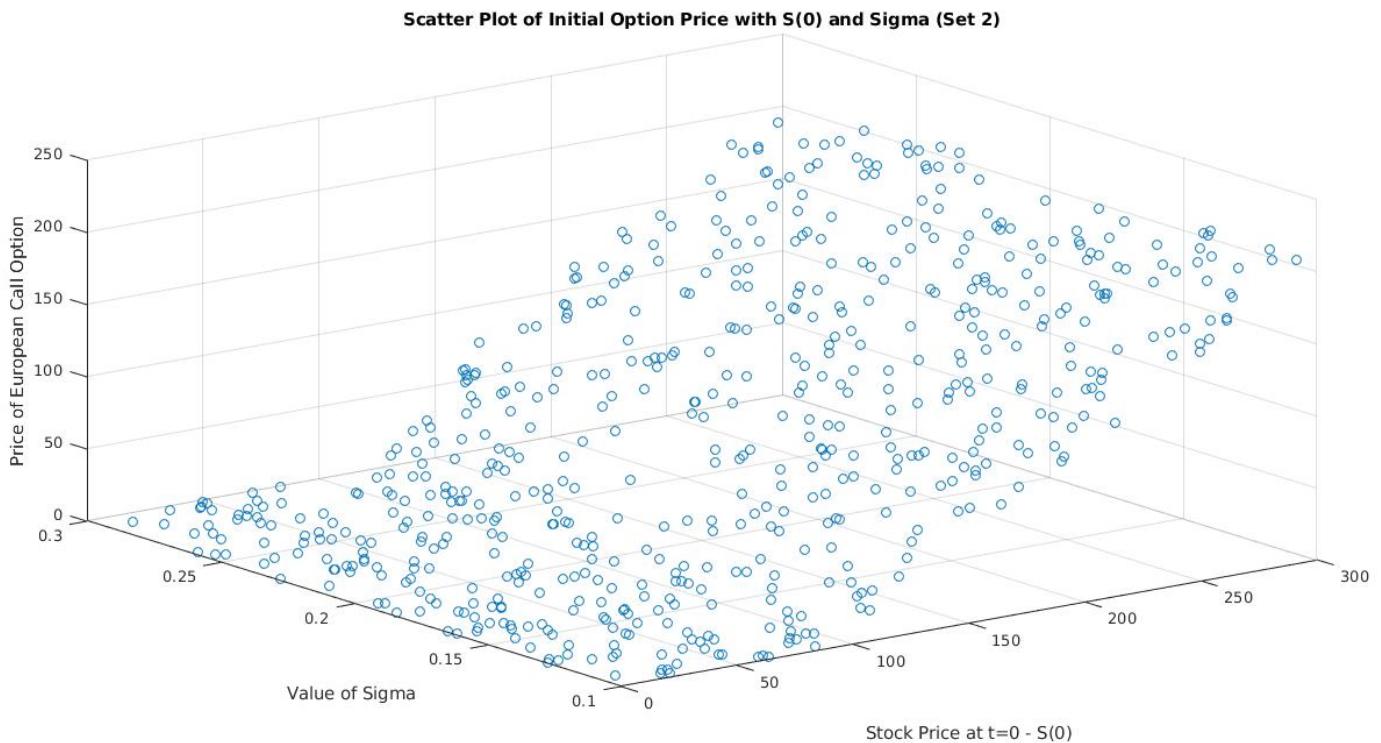
Scatter Plot of Initial Option Price with $S(0)$ and r (Set 2)



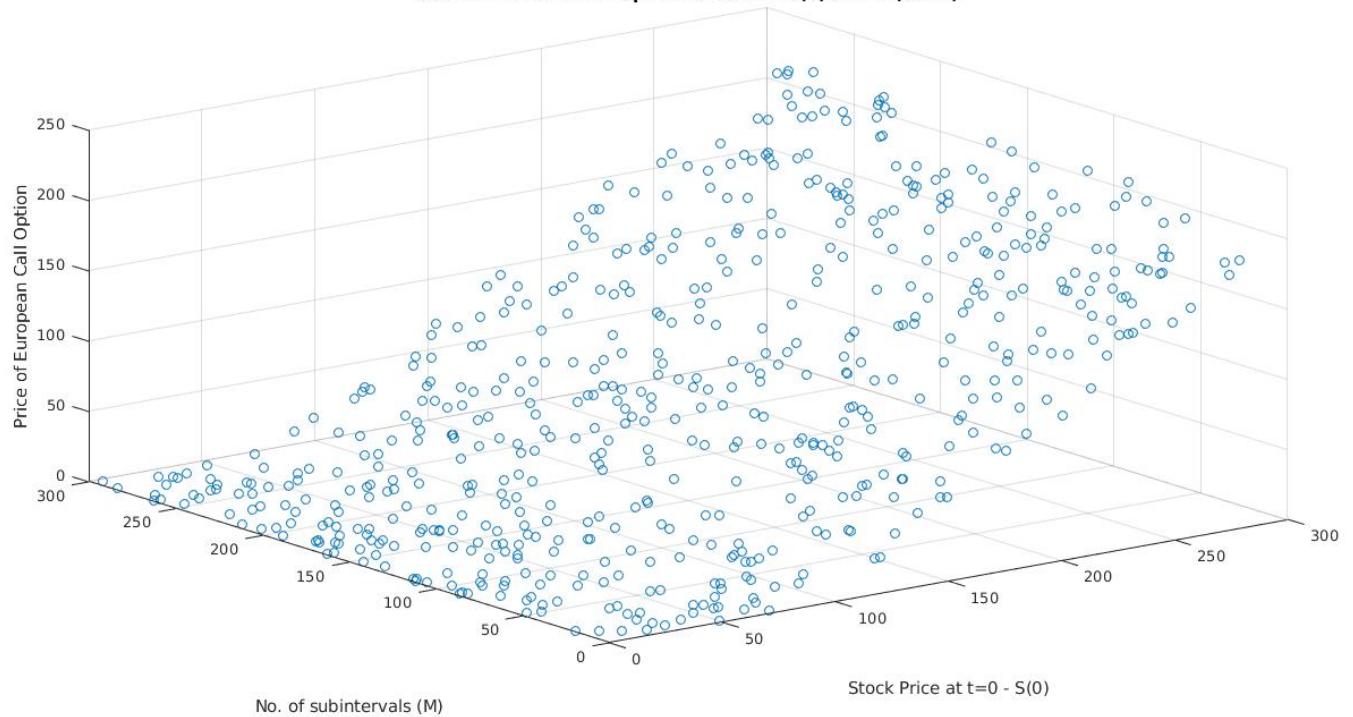
Scatter Plot of Initial Option Price with $S(0)$ and r (Set 2)



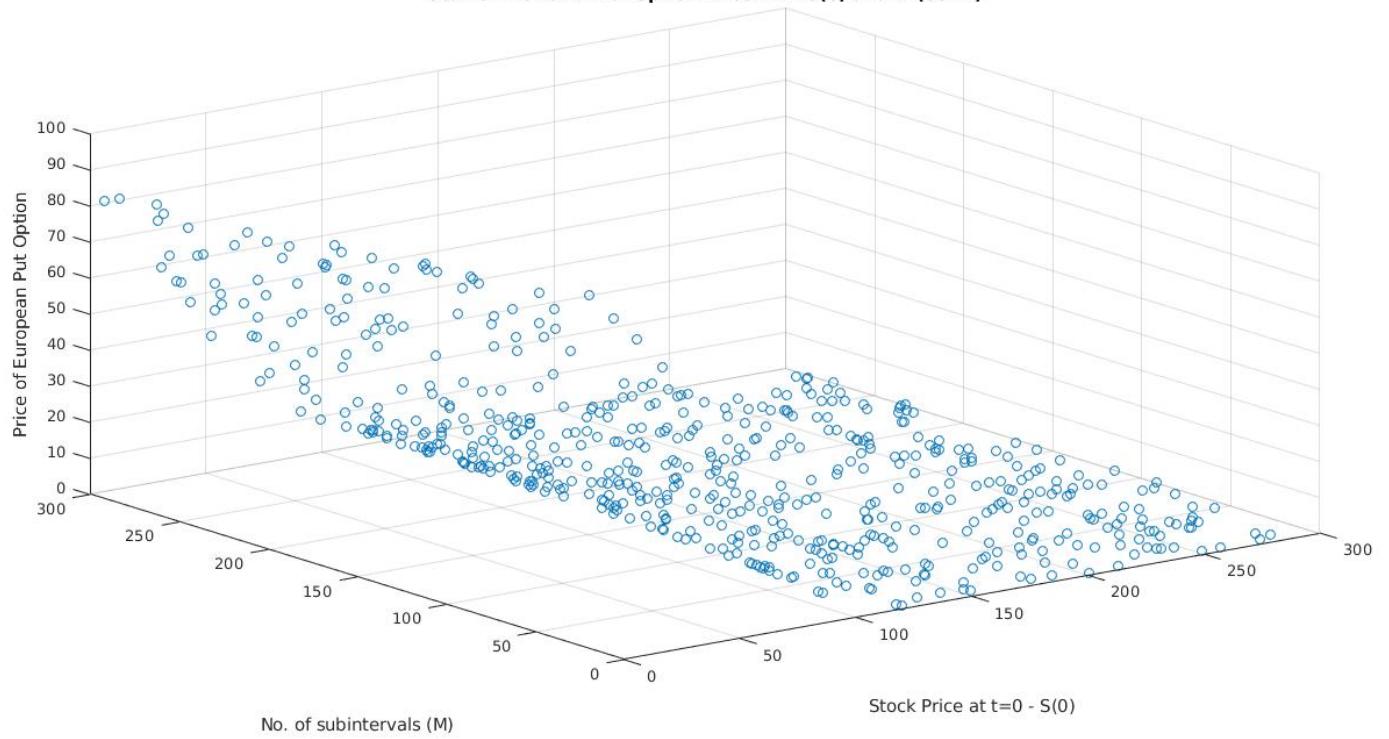




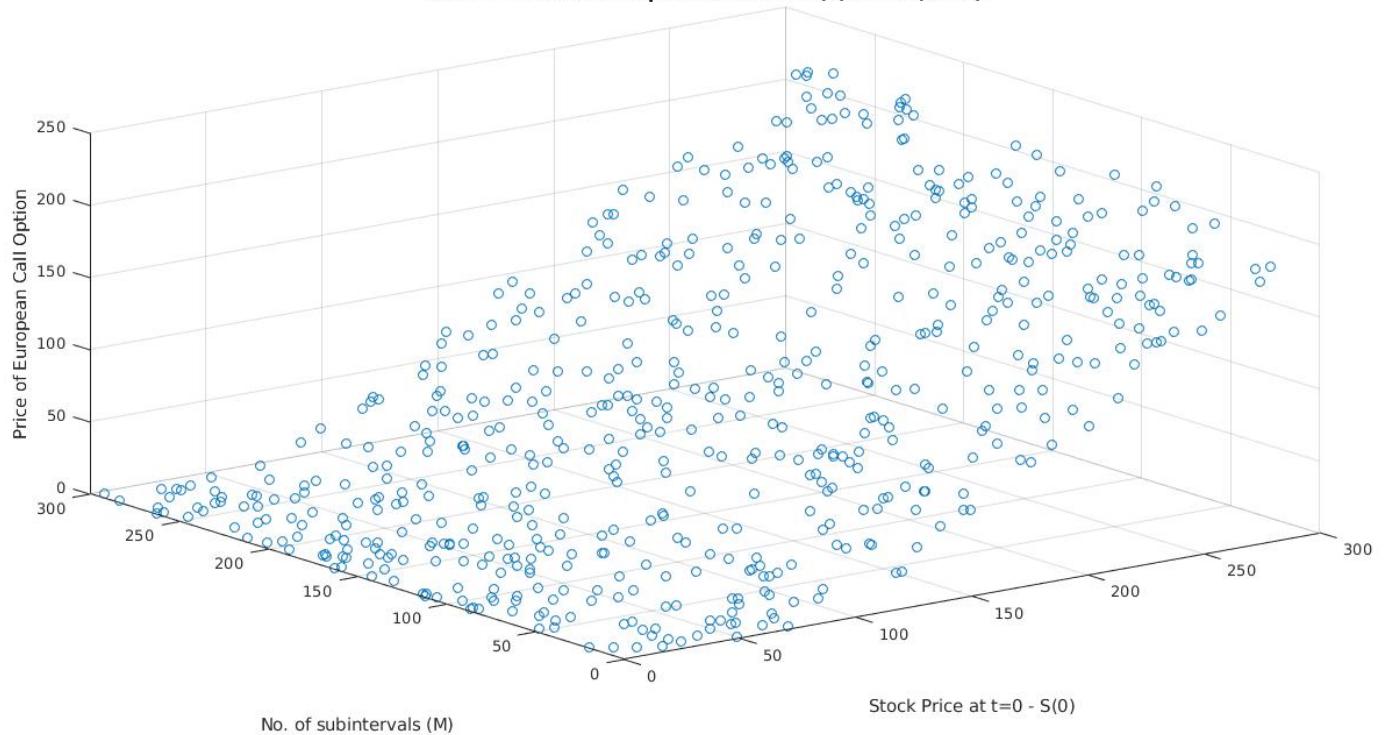
Scatter Plot of Initial Option Price with $S(0)$ and M (Set 1)



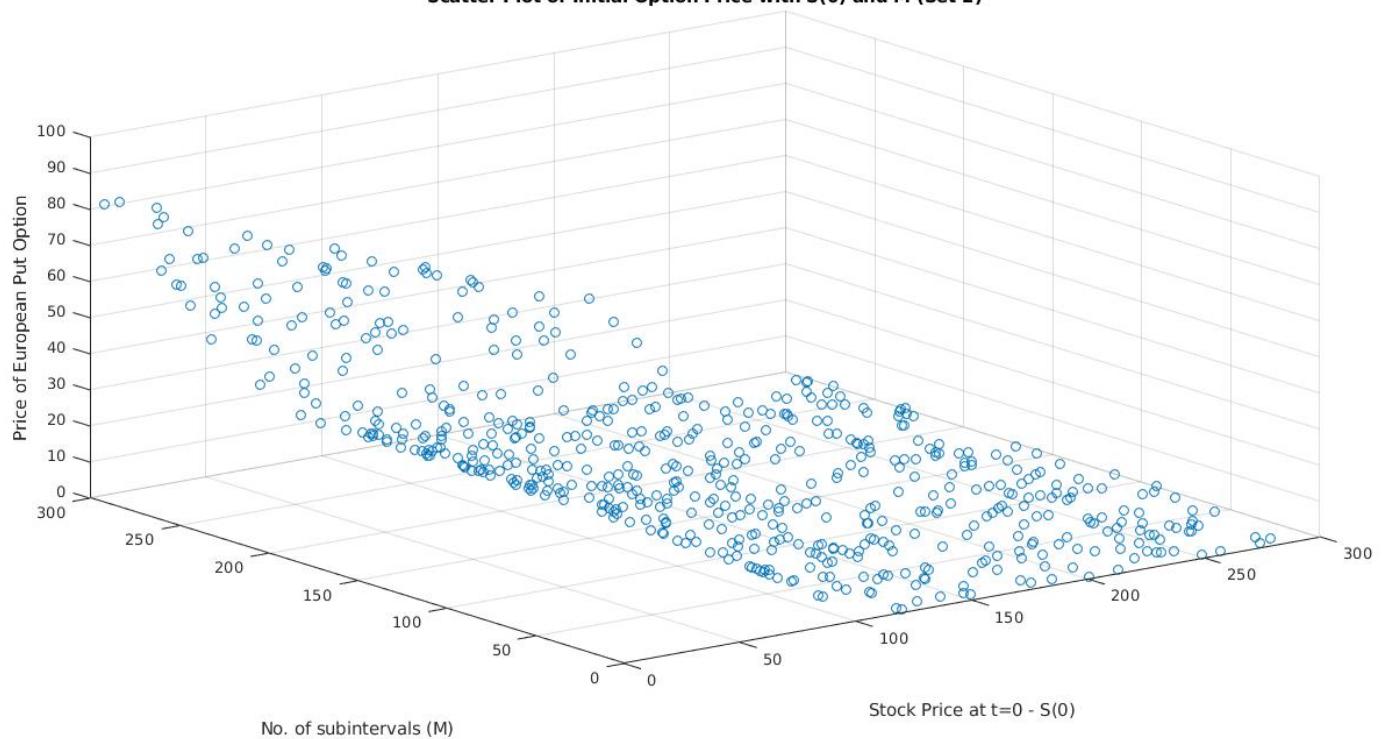
Scatter Plot of Initial Option Price with $S(0)$ and M (Set 1)



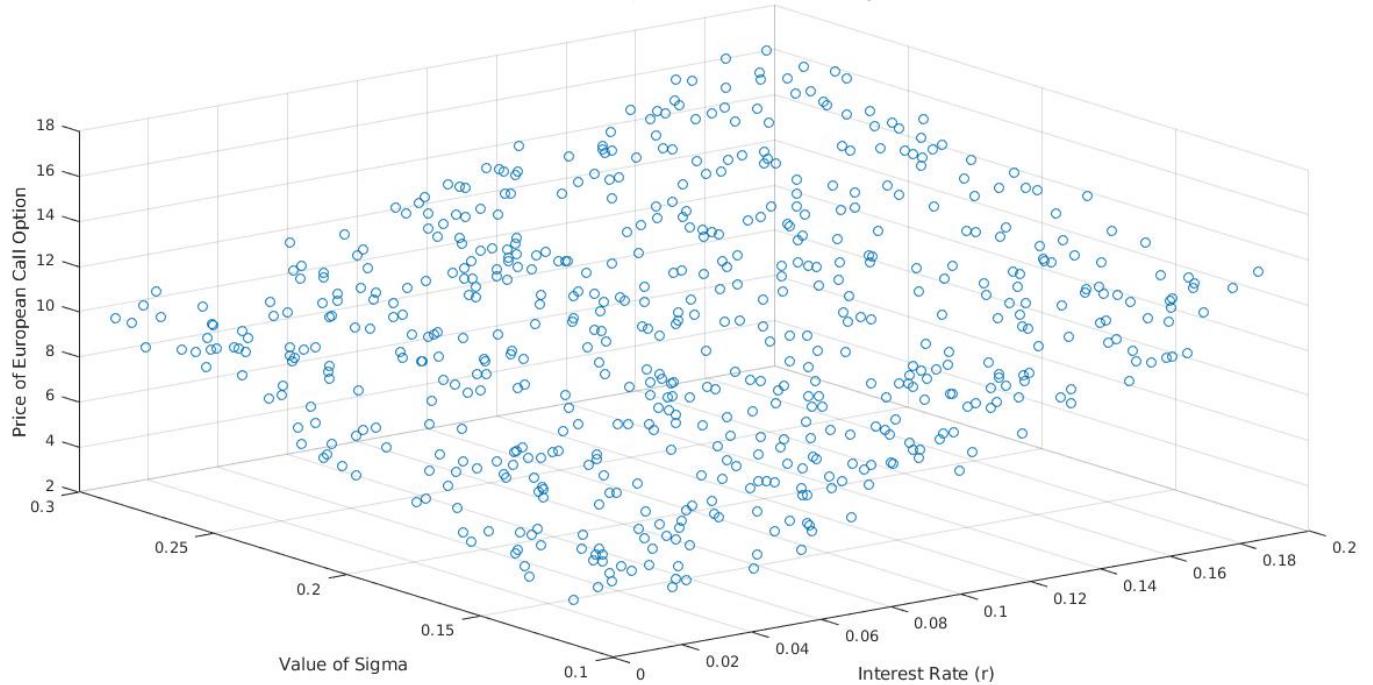
Scatter Plot of Initial Option Price with $S(0)$ and M (Set 2)



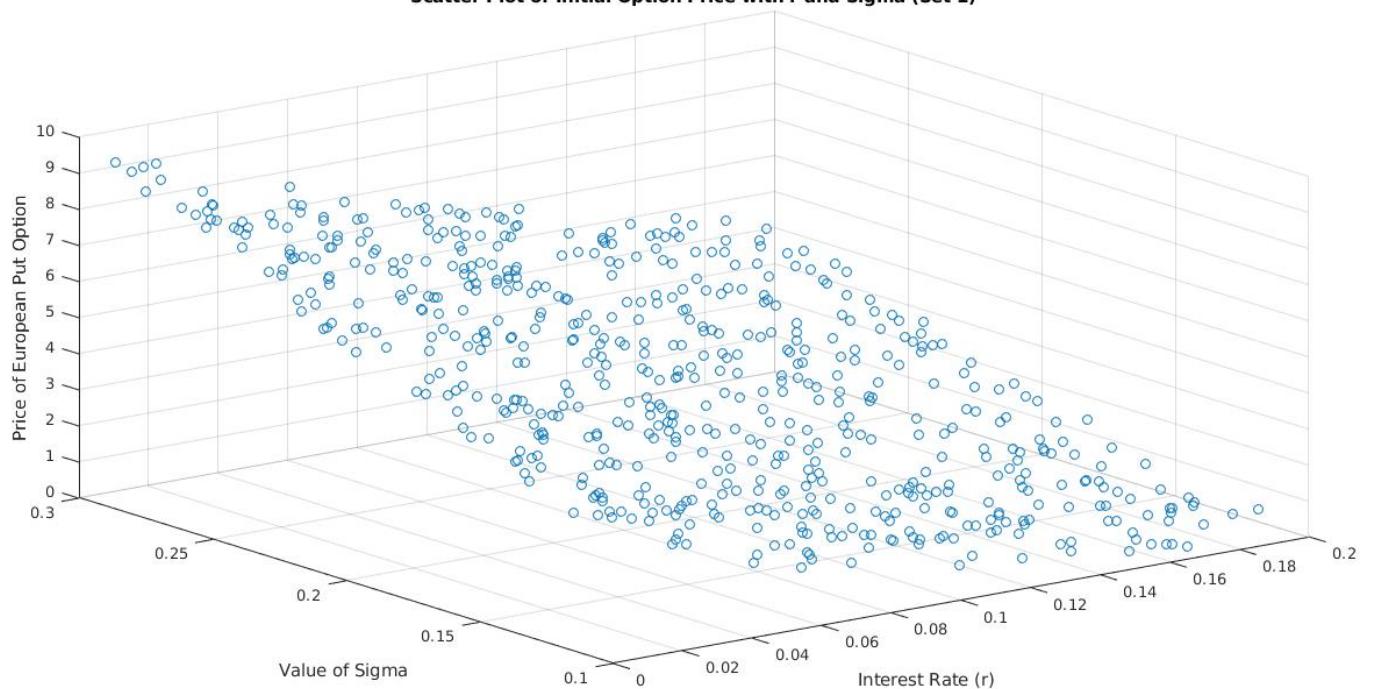
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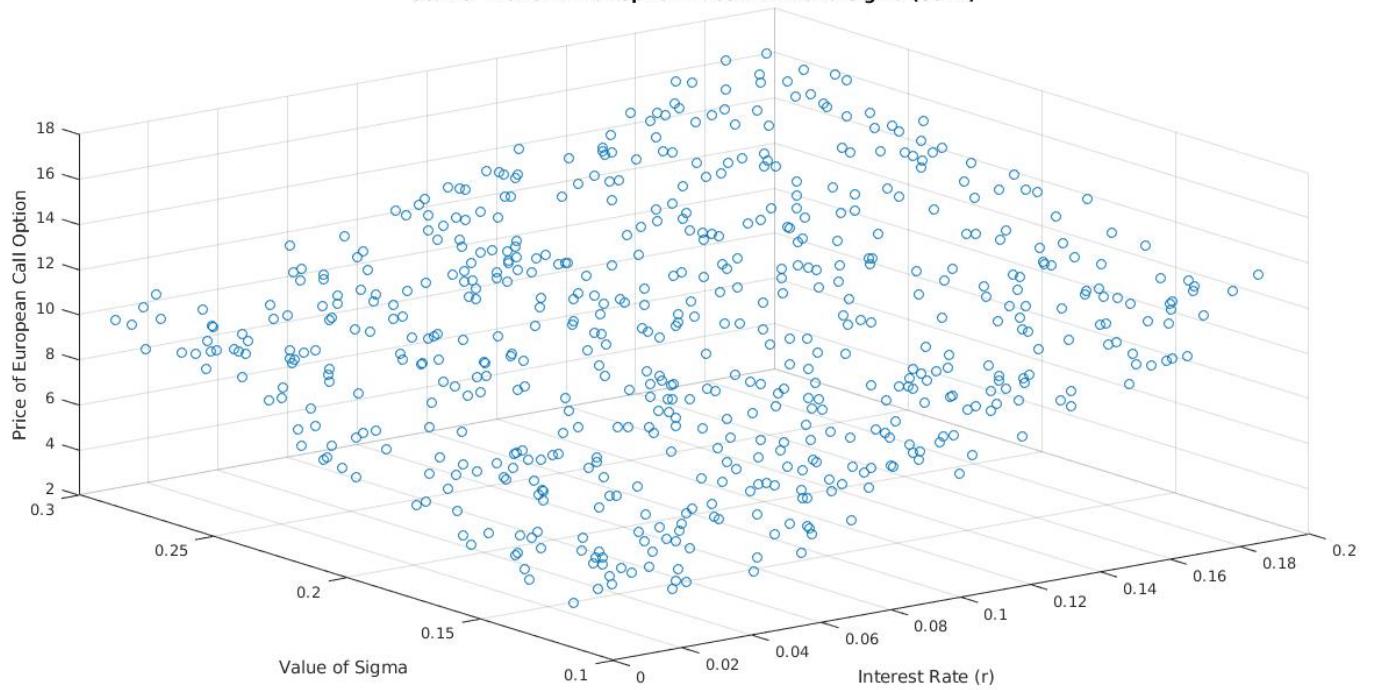
Scatter Plot of Initial Option Price with r and Sigma (Set 1)



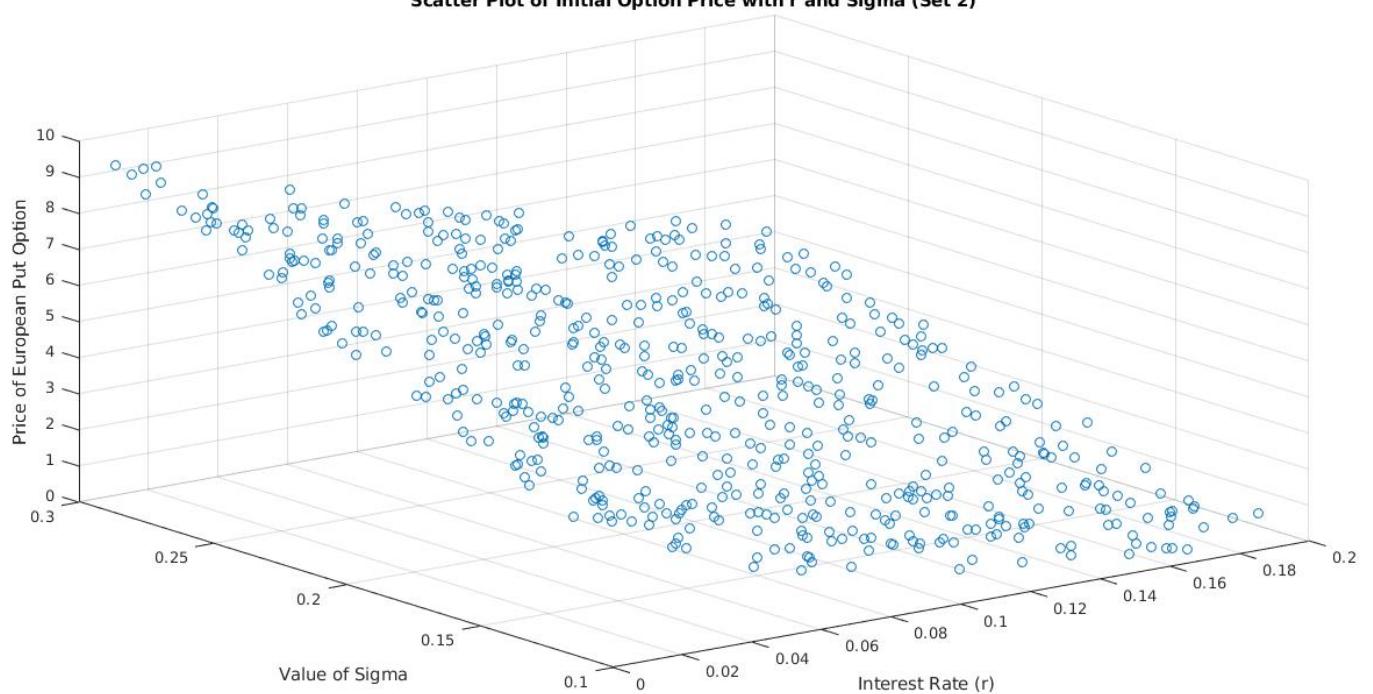
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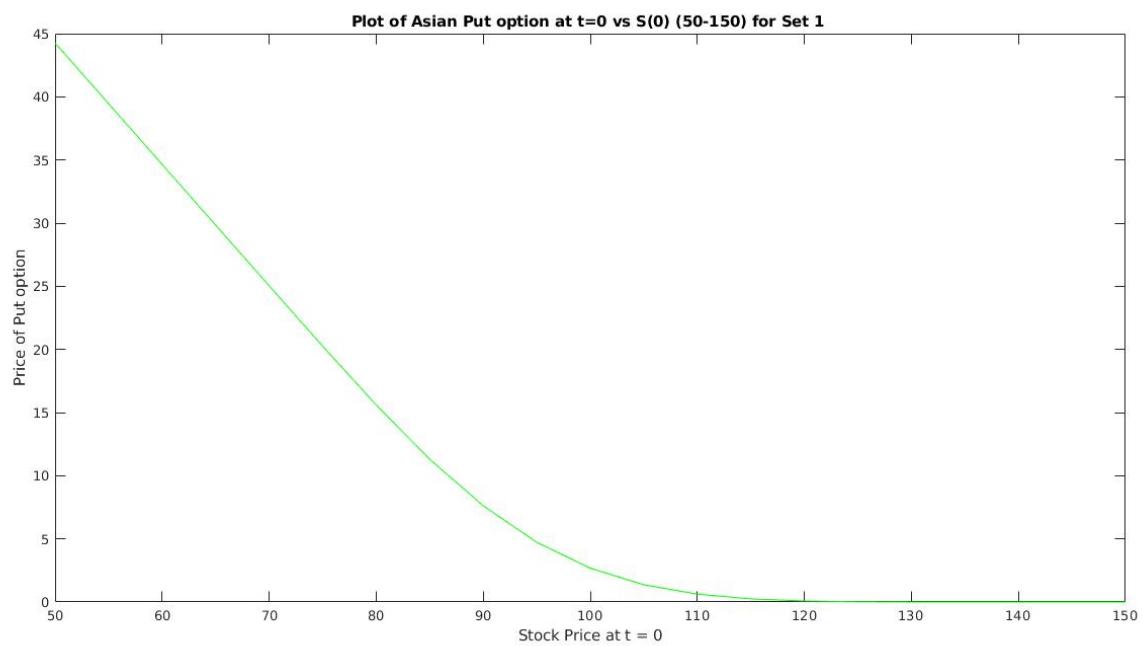
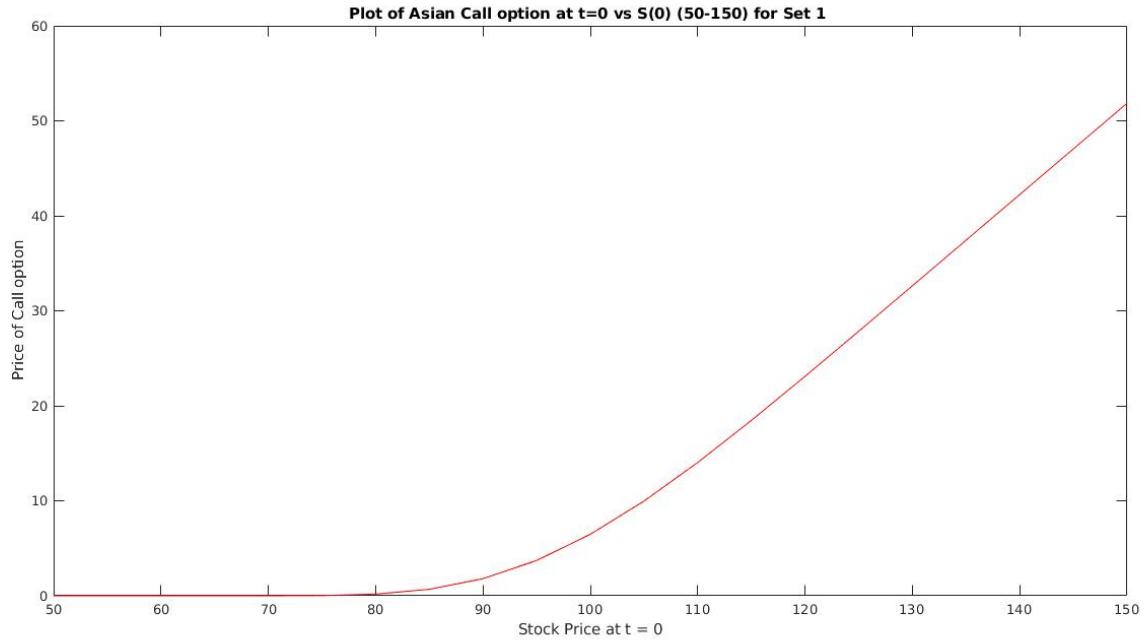
Scatter Plot of Initial Option Price with r and Sigma (Set 2)

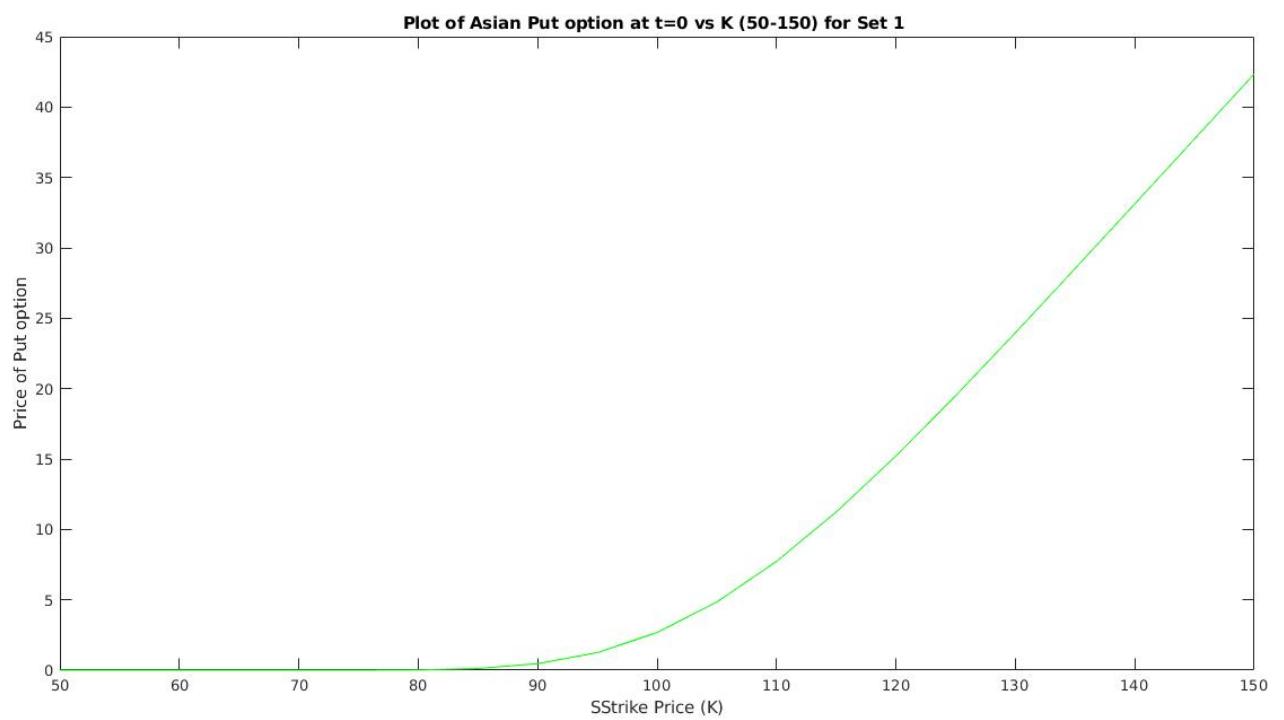
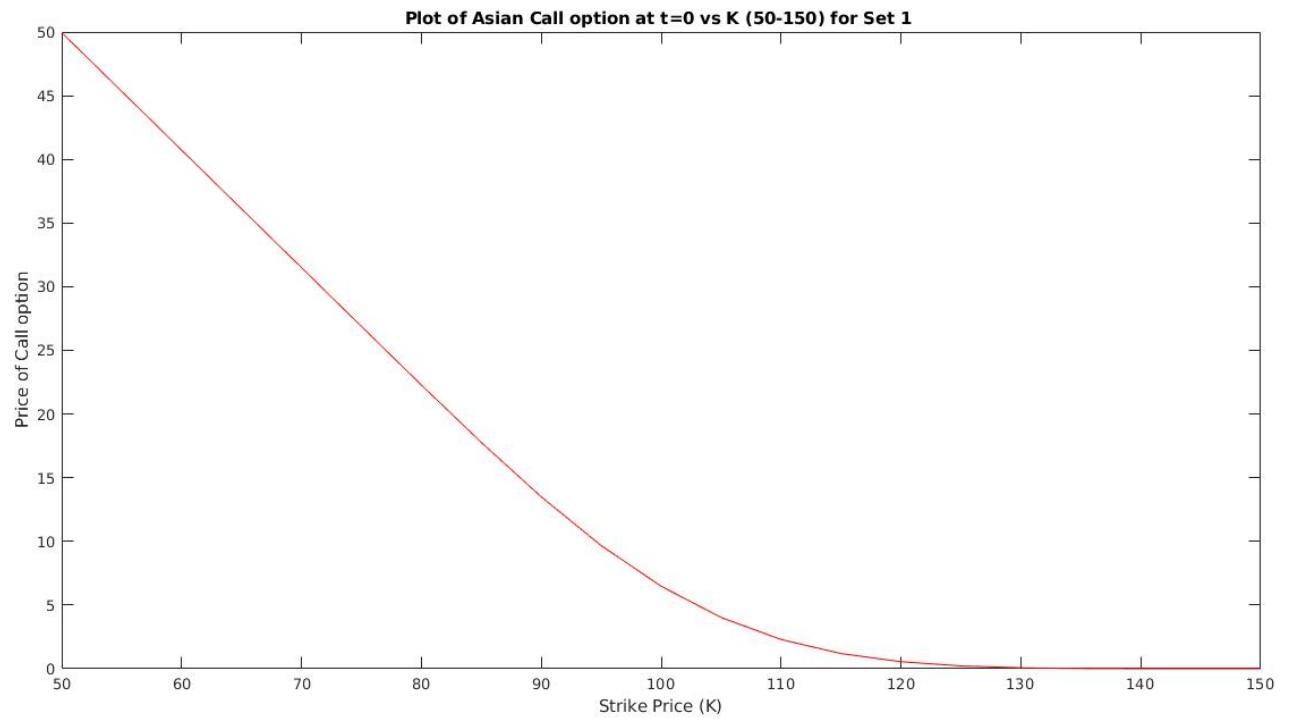


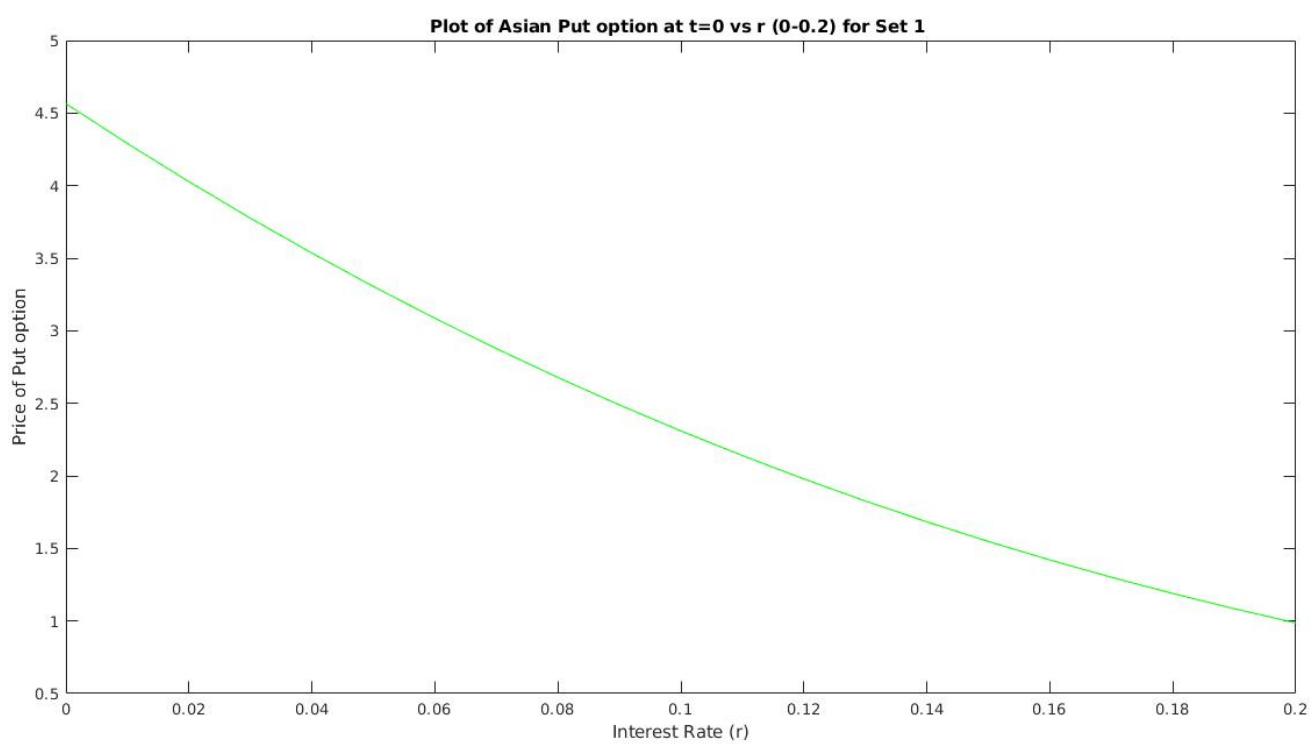
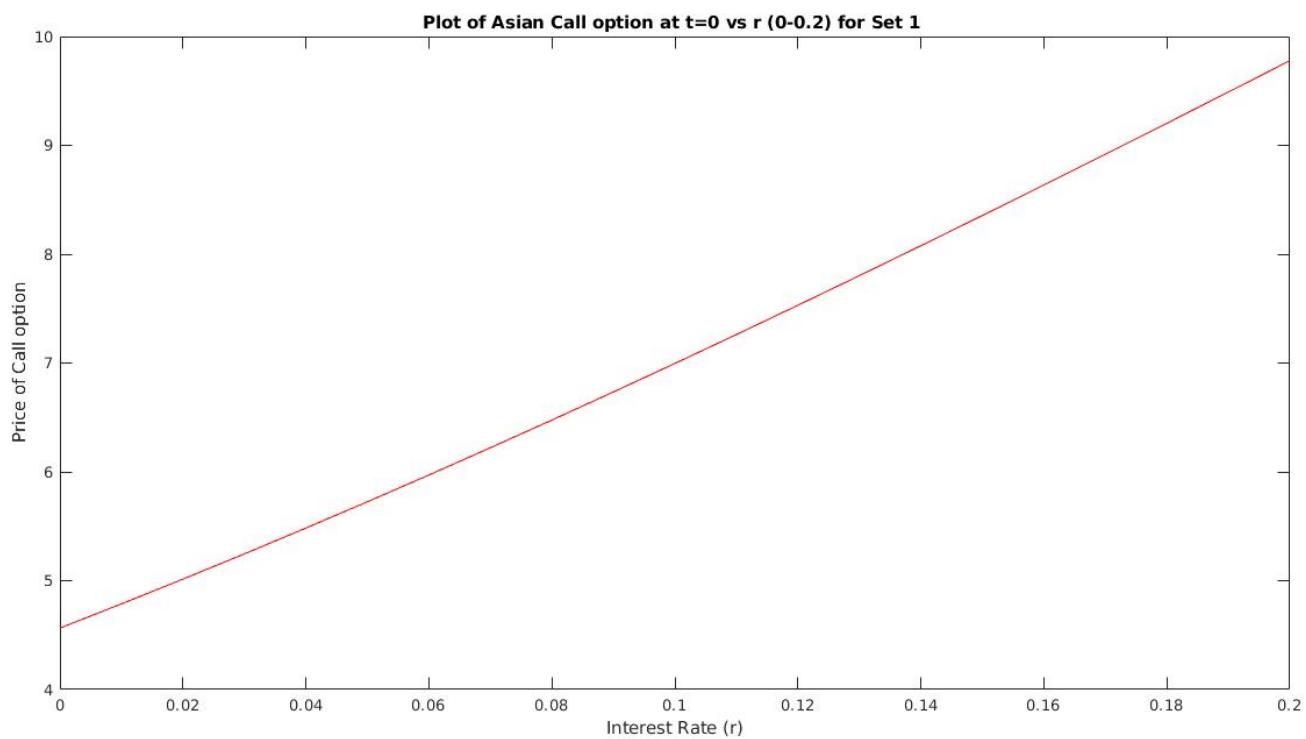
Scatter Plot of Initial Option Price with r and Sigma (Set 2)

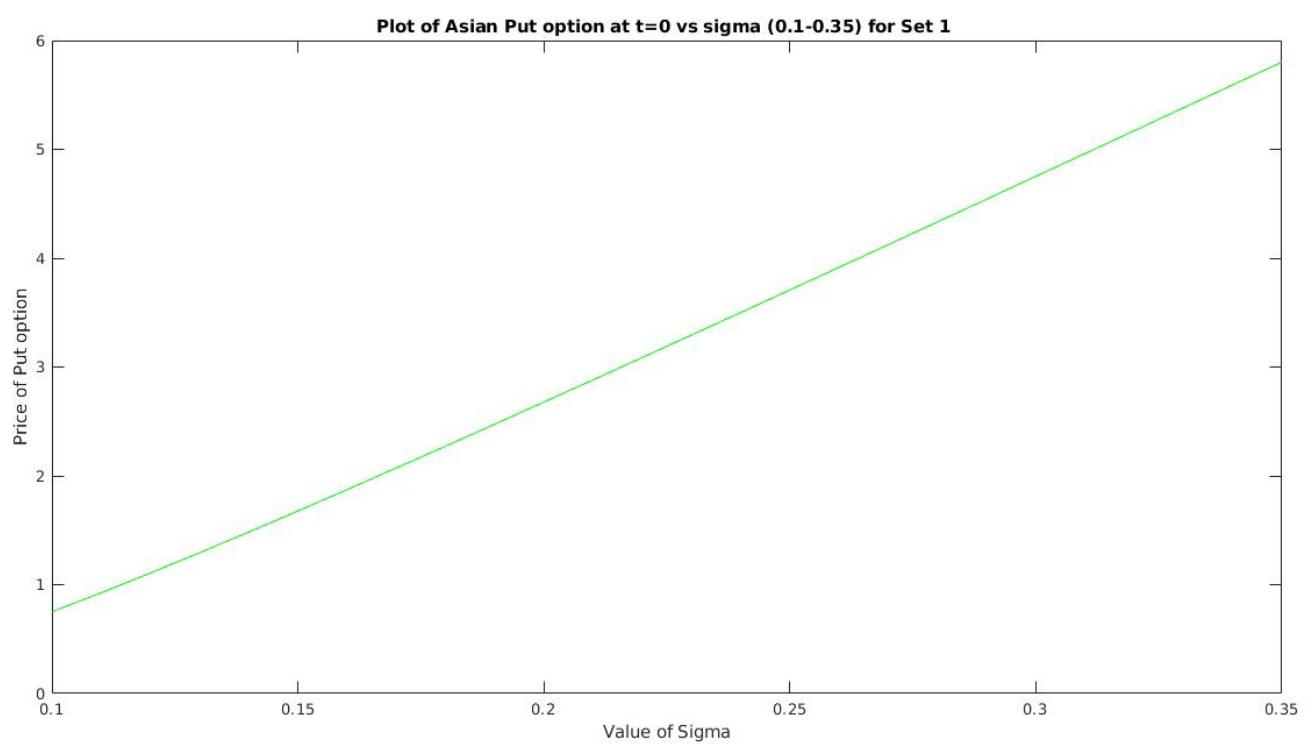
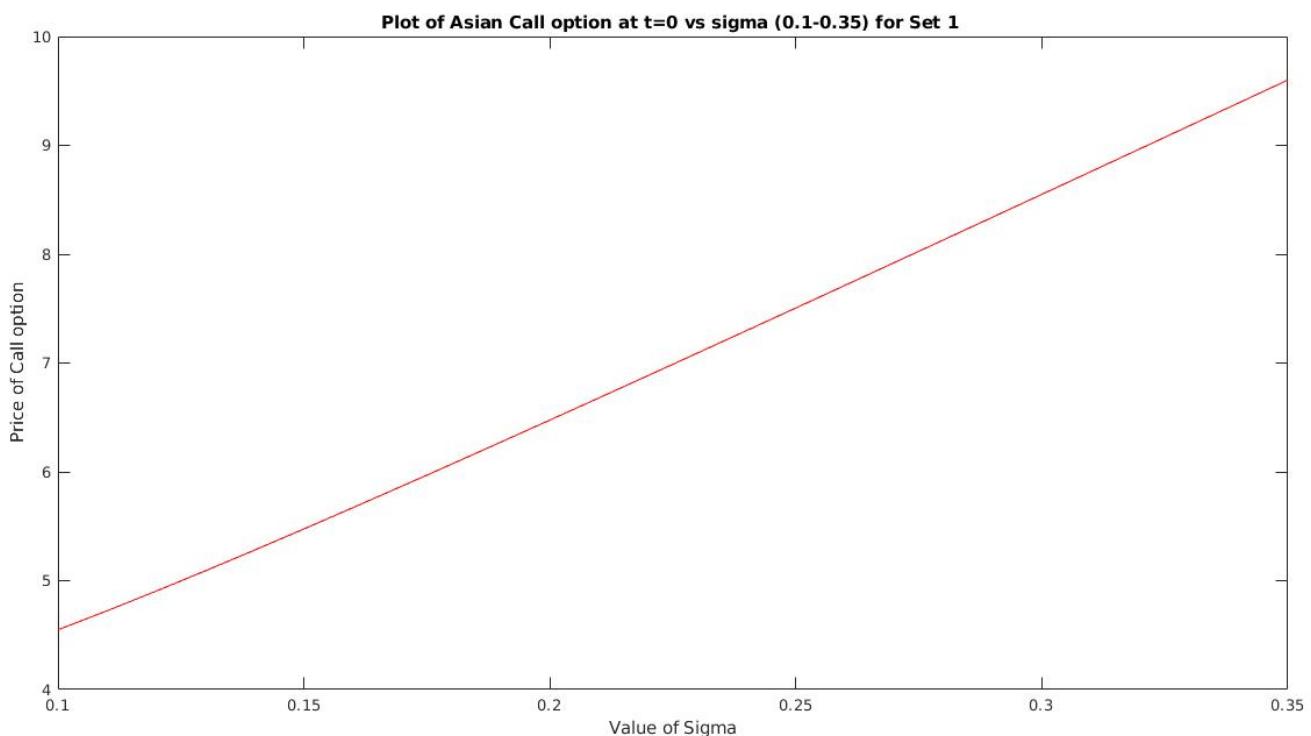


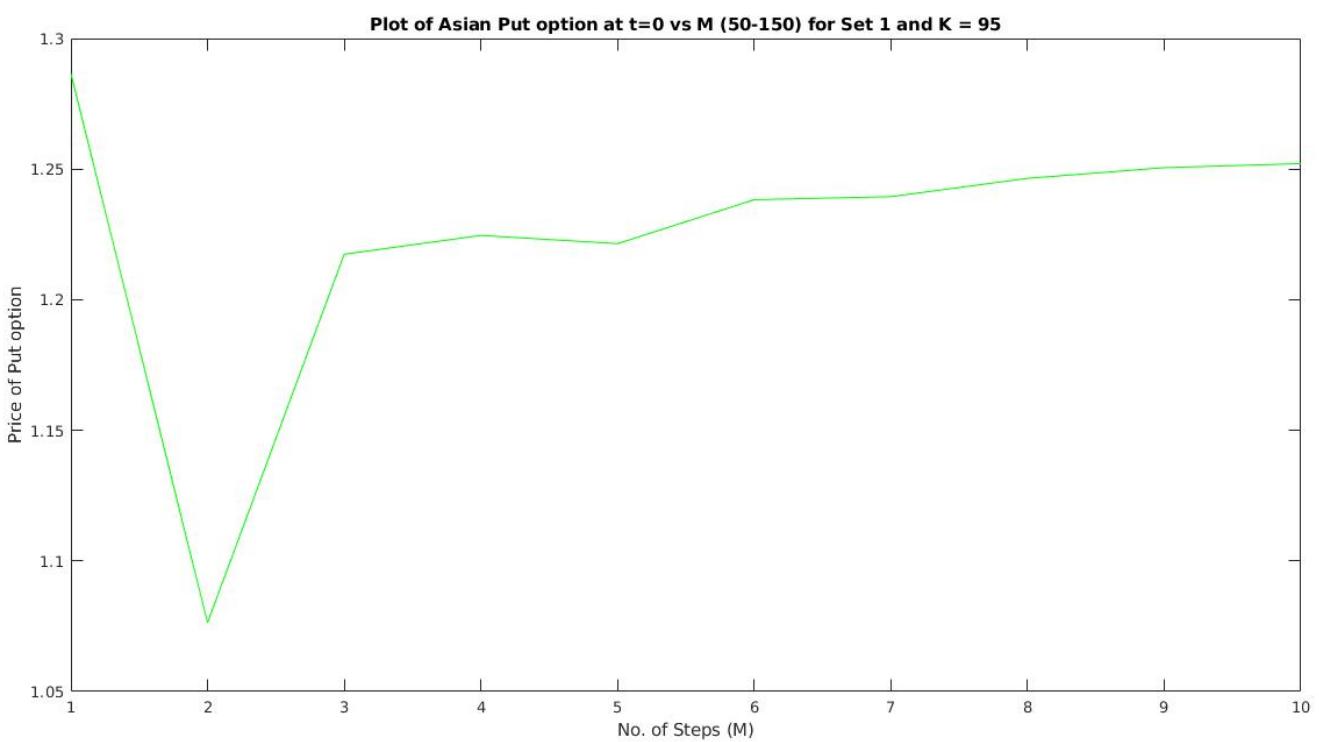
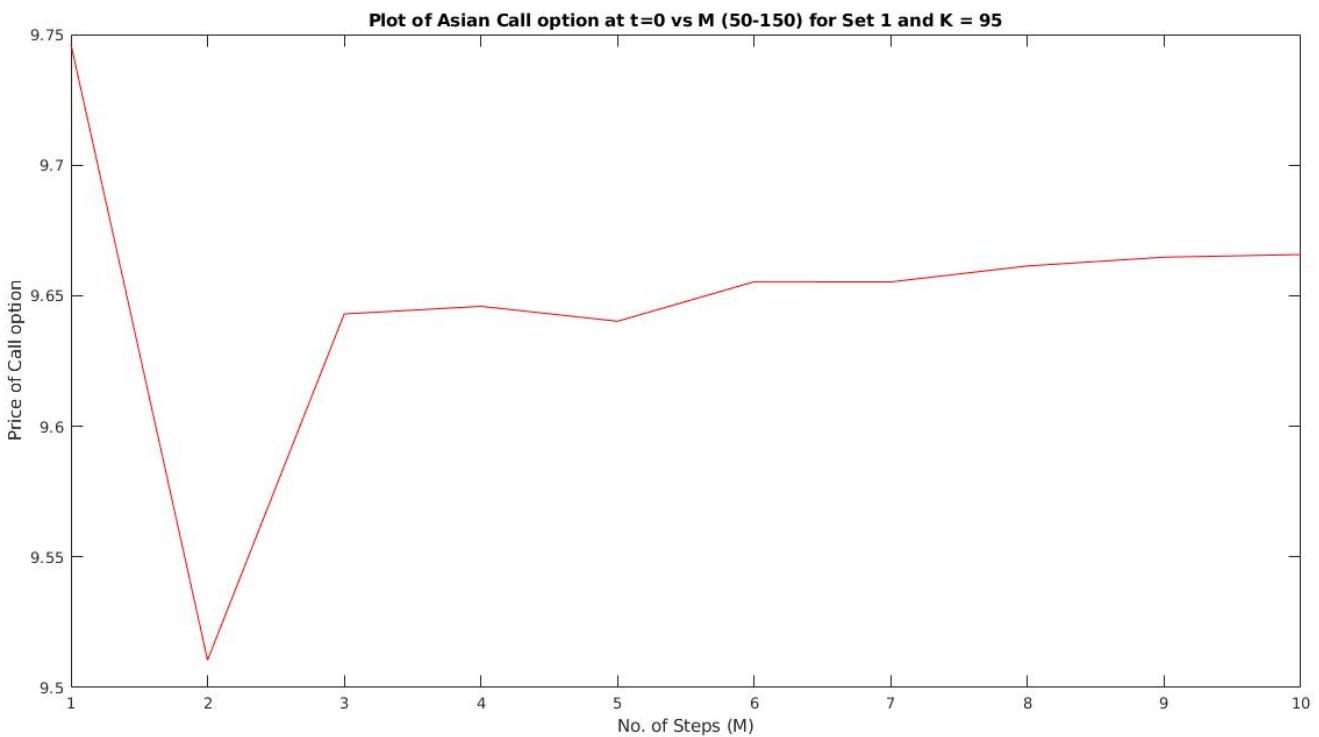
◆ Question 2 (Plots)

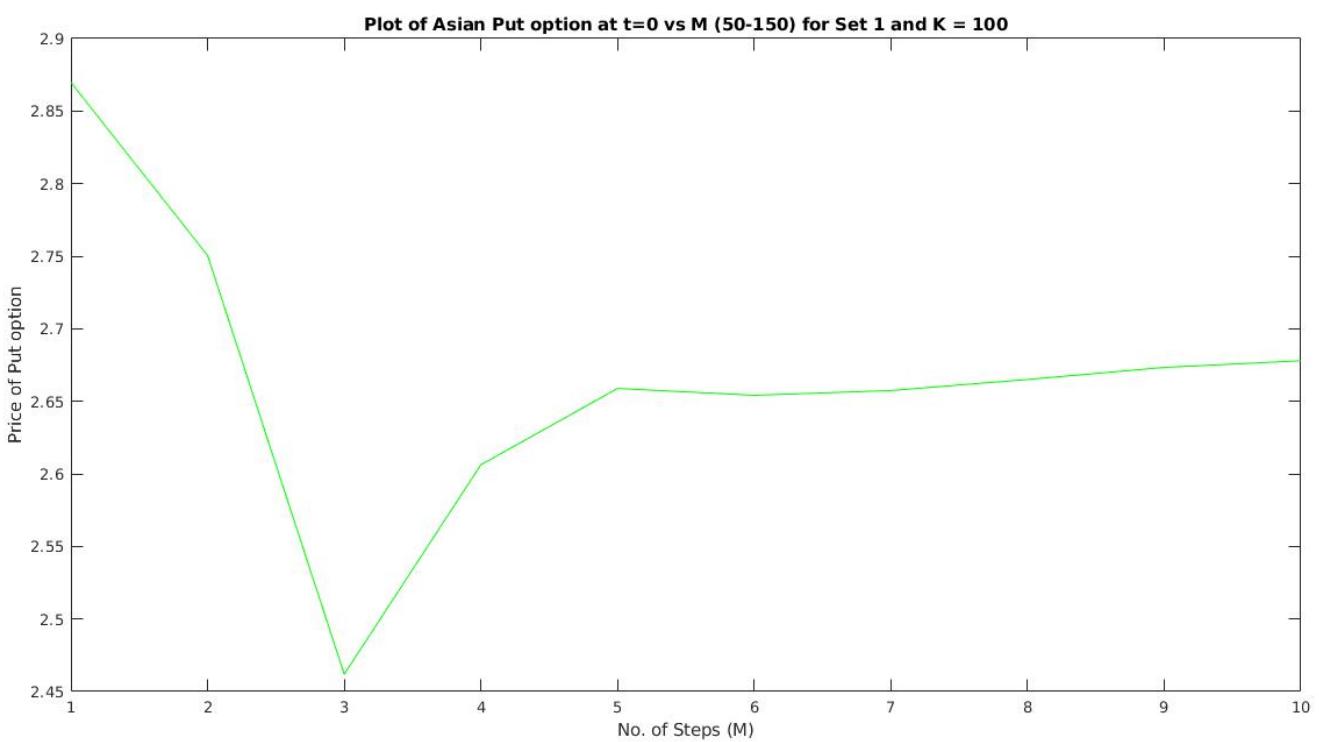
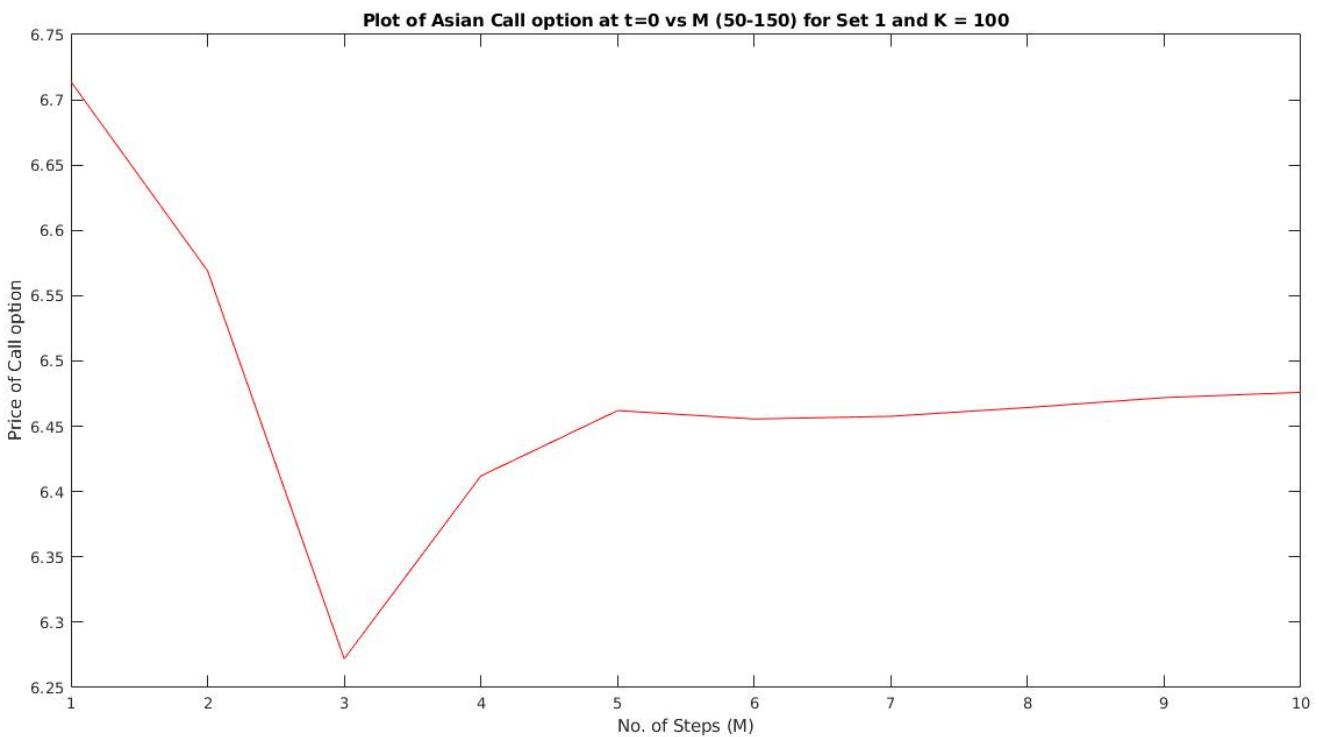


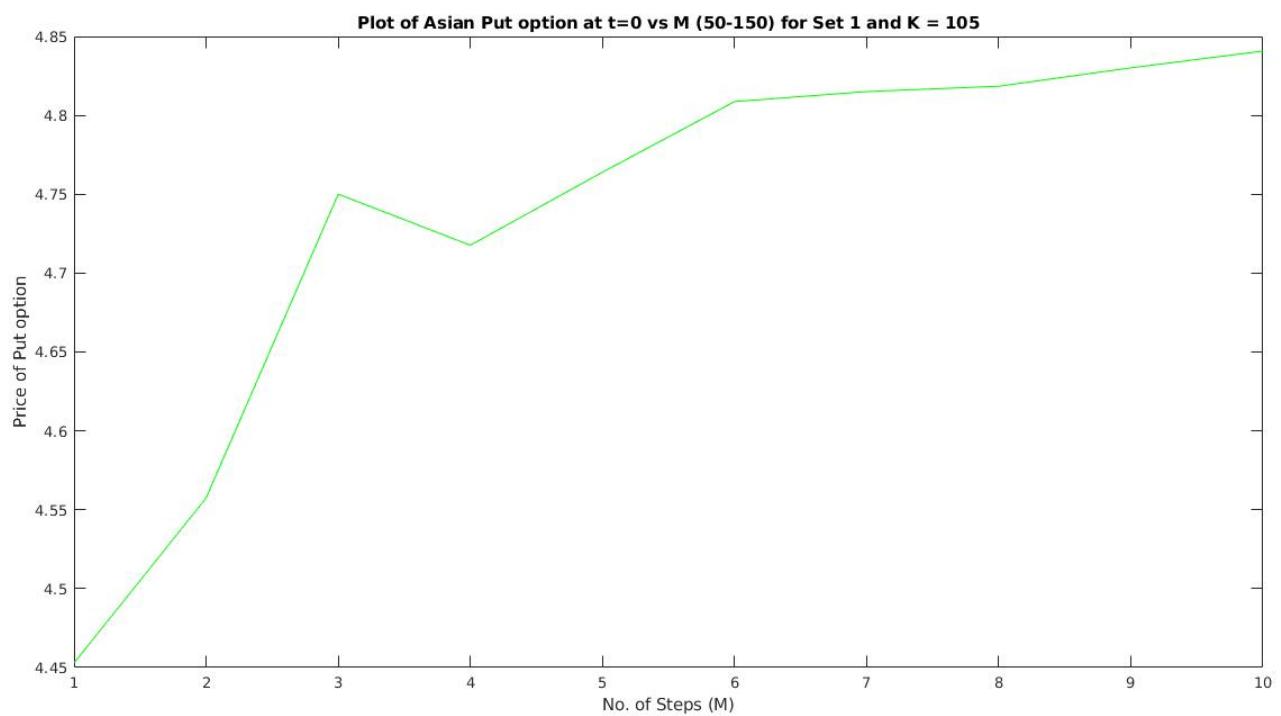
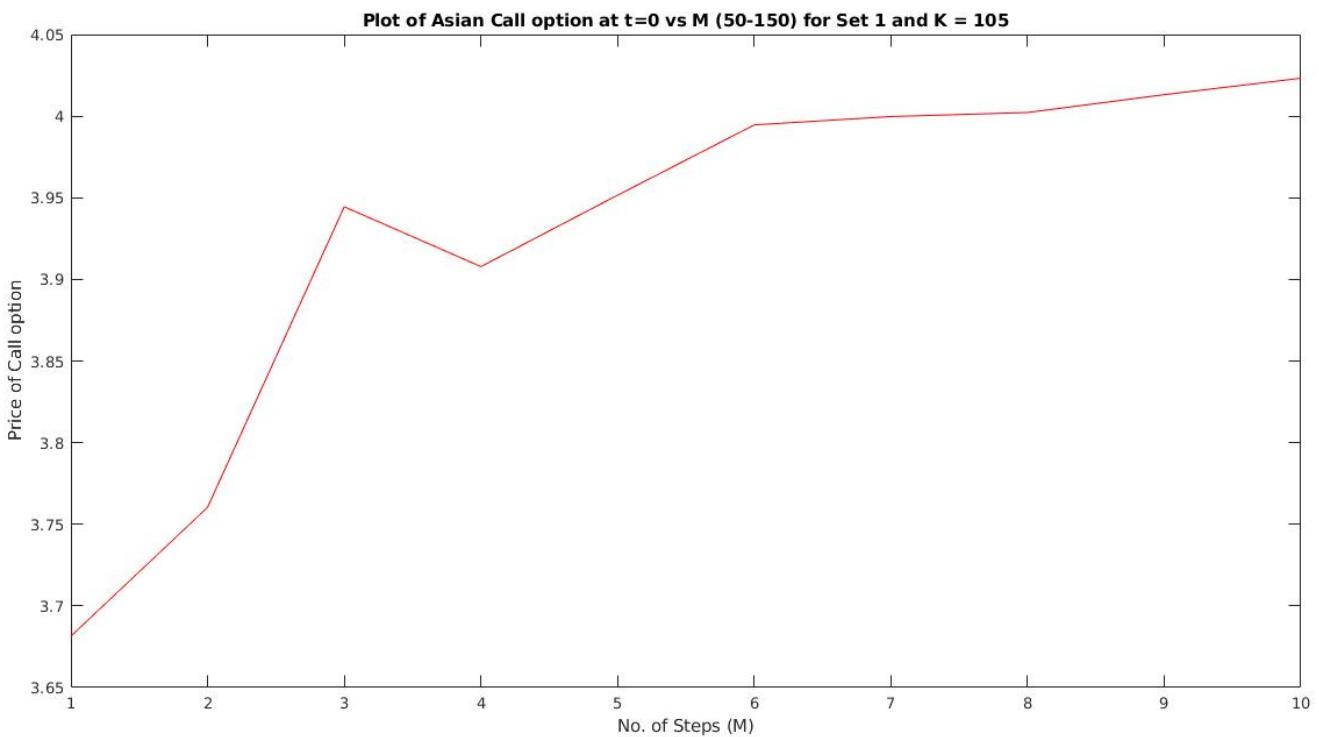








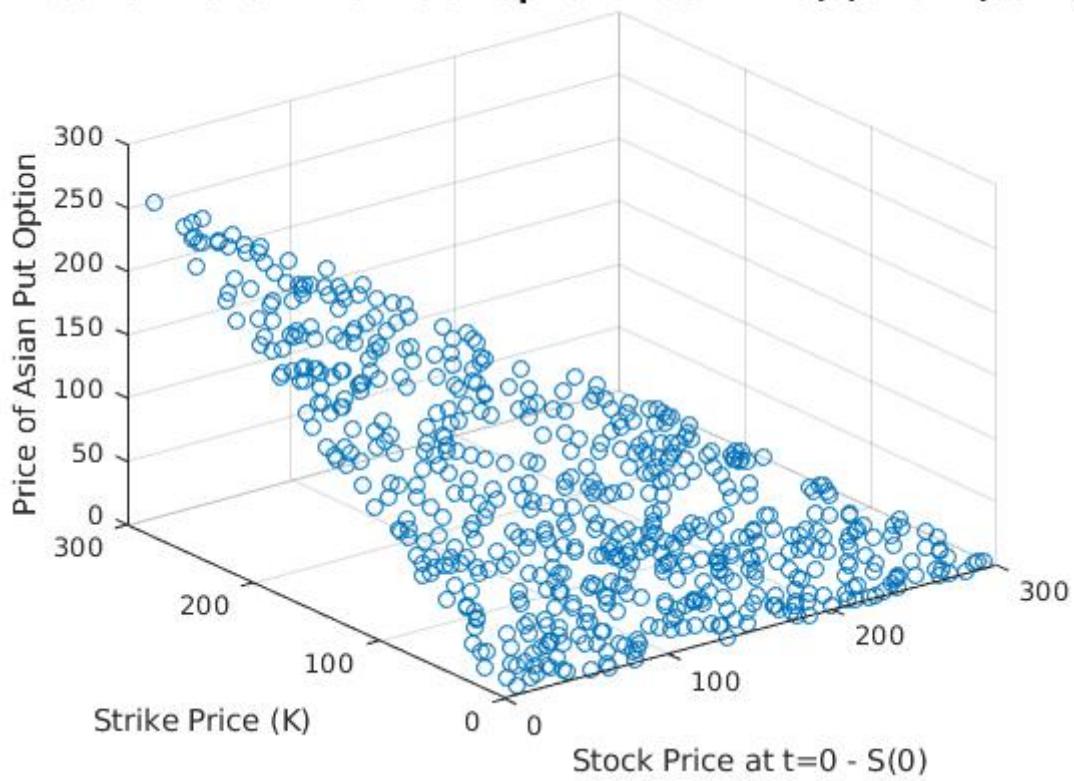




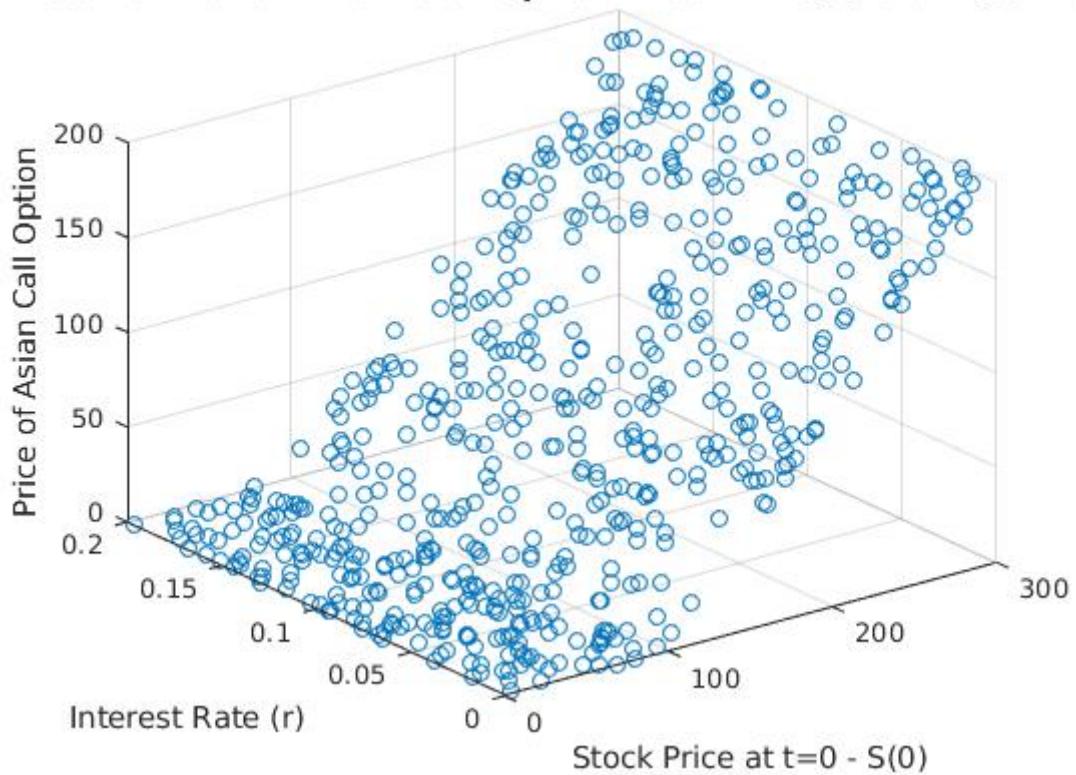
Scatter Plot of Initial Asian Option Price with $S(0)$ and K (Set 1)



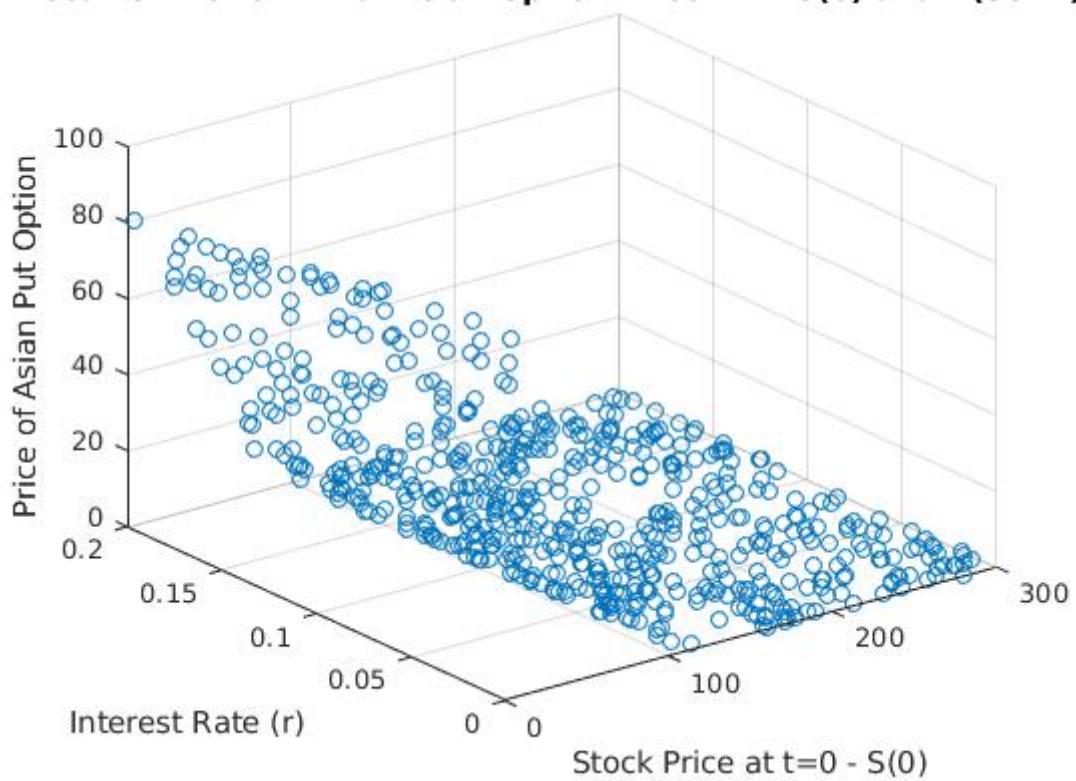
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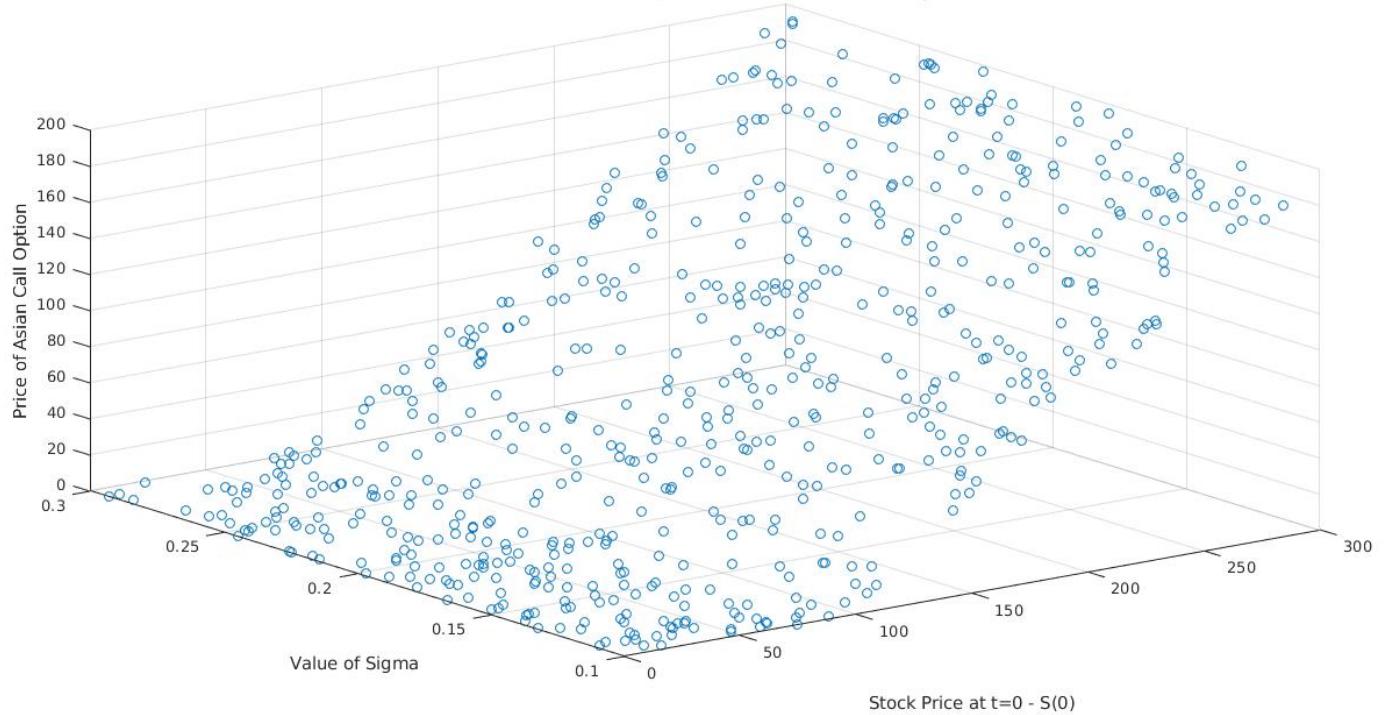
Scatter Plot of Initial Asian Option Price with $S(0)$ and r (Set 1)



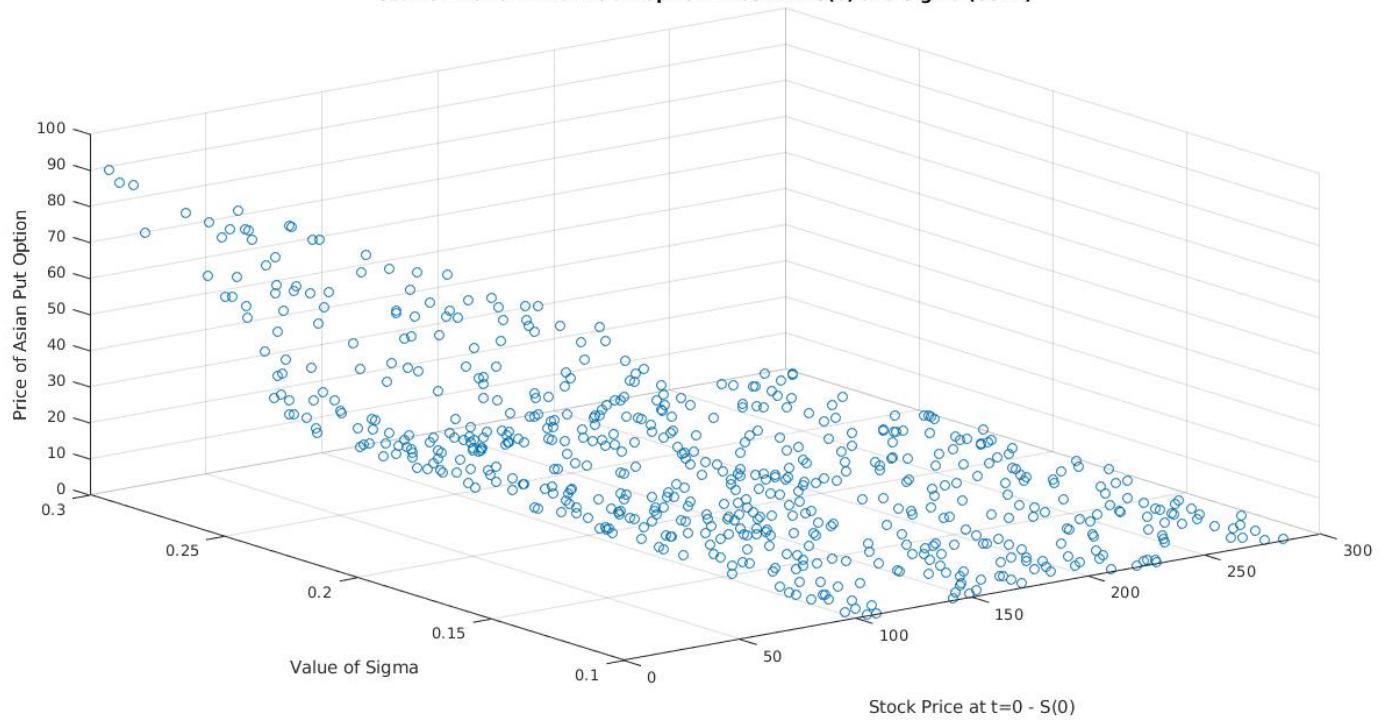
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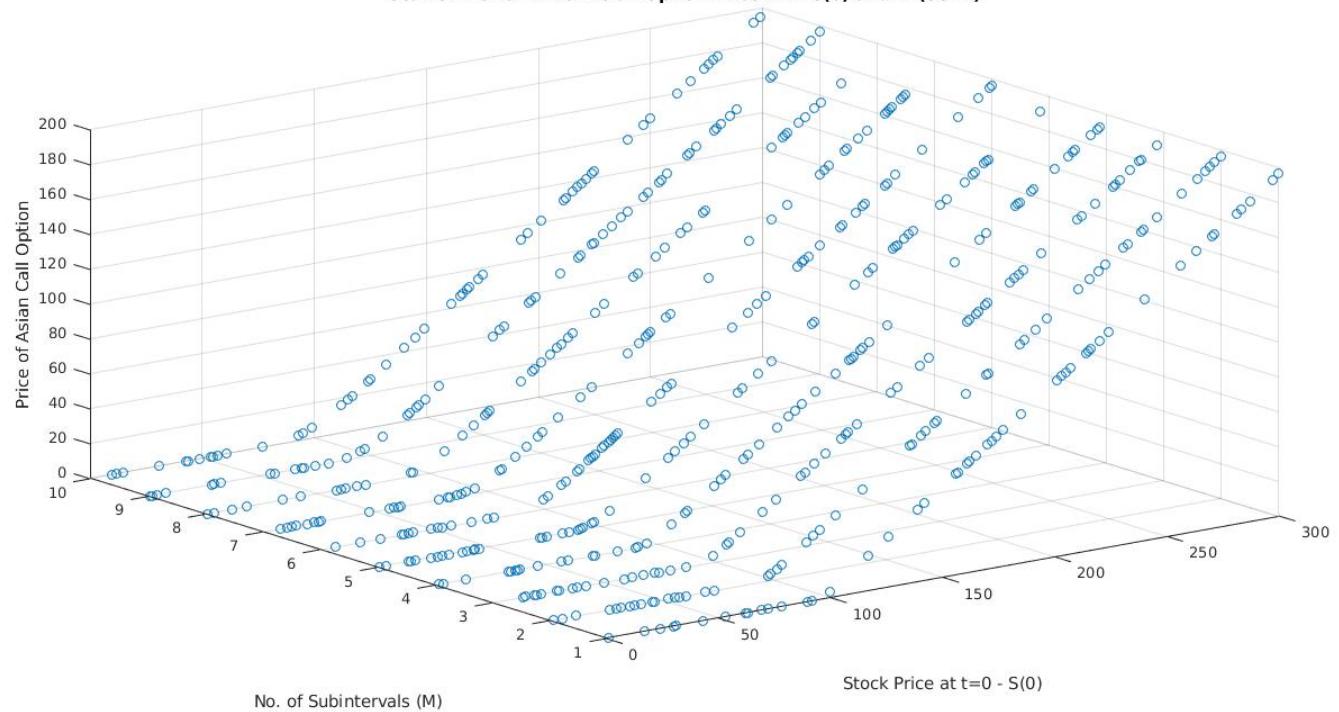
Scatter Plot of Initial Asian Option Price with $S(0)$ and Sigma (Set 1)



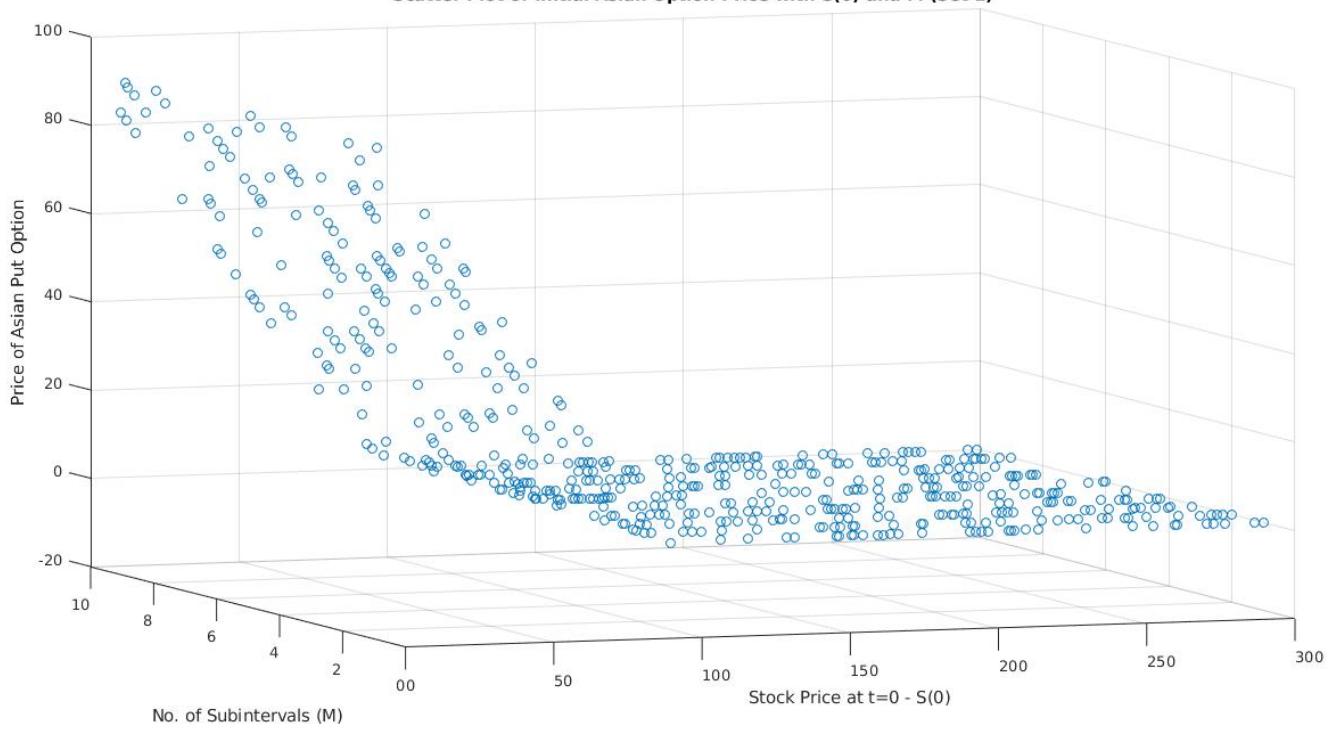
Scatter Plot of Initial Asian Option Price with $S(0)$ and Sigma (Set 1)



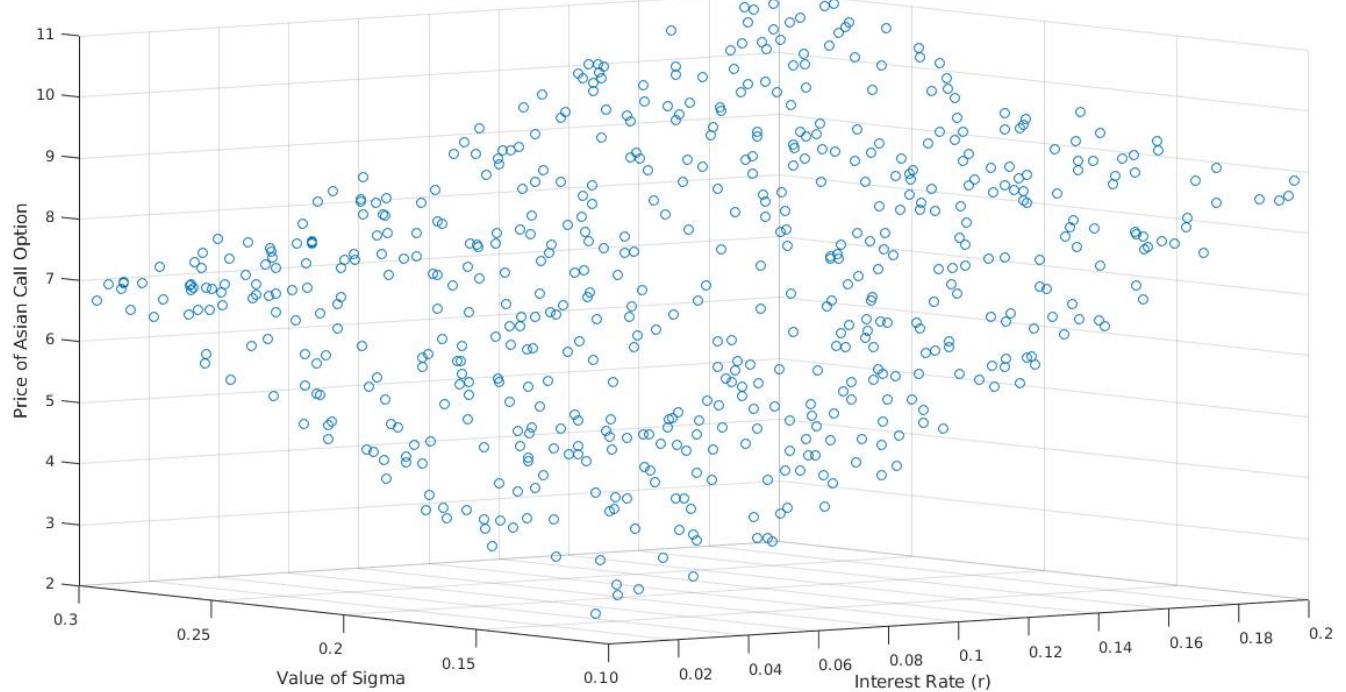
Scatter Plot of Initial Asian Option Price with $S(0)$ and M (Set 1)



Scatter Plot of Initial Asian Option Price with $S(0)$ and M (Set 1)



Scatter Plot of Initial Asian Option Price with r and sigma (Set 1)



Scatter Plot of Initial Asian Option Price with r and sigma (Set 1)

