MA 473 Lab 02

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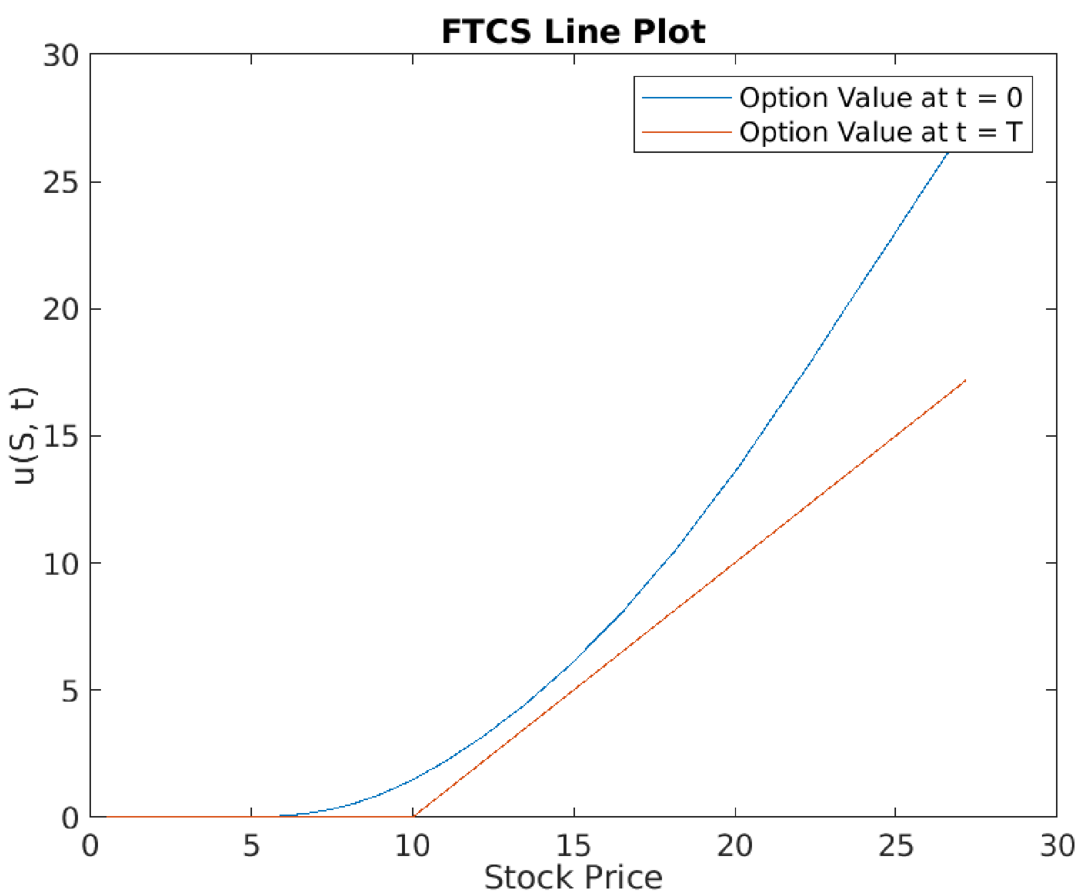
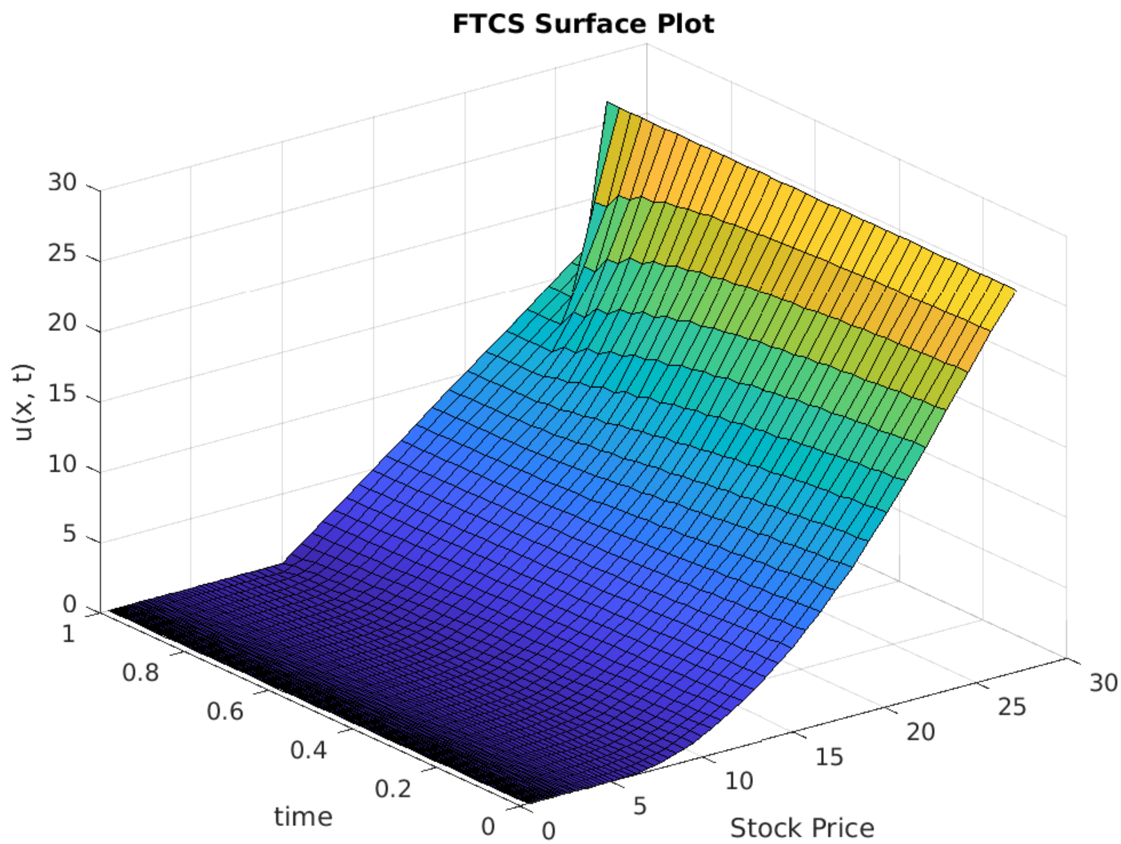
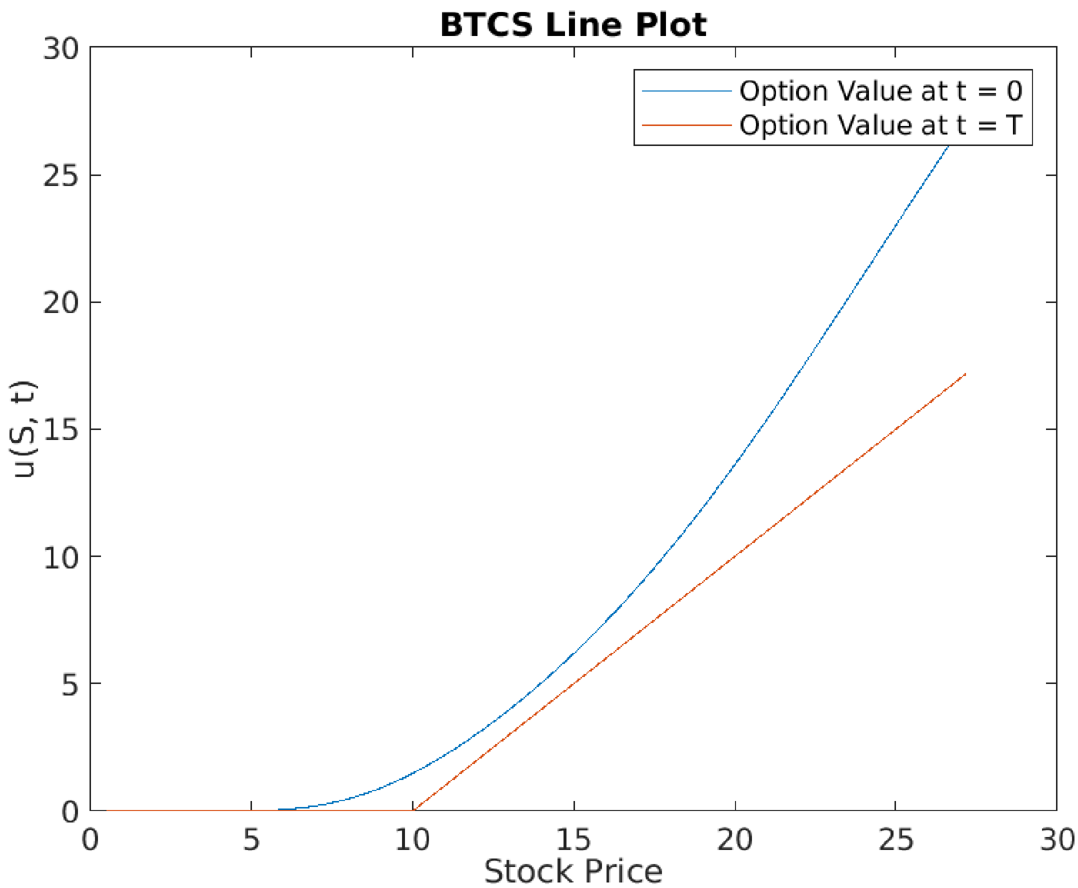
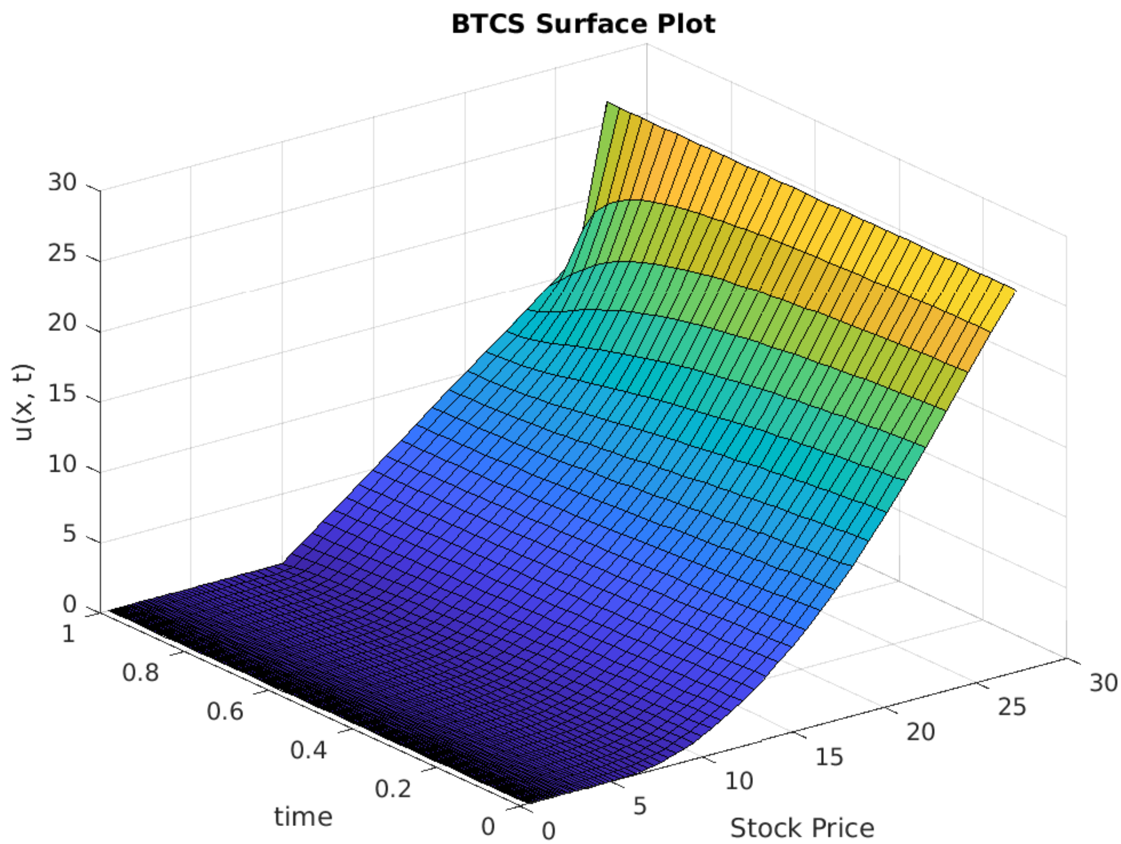
Question 1

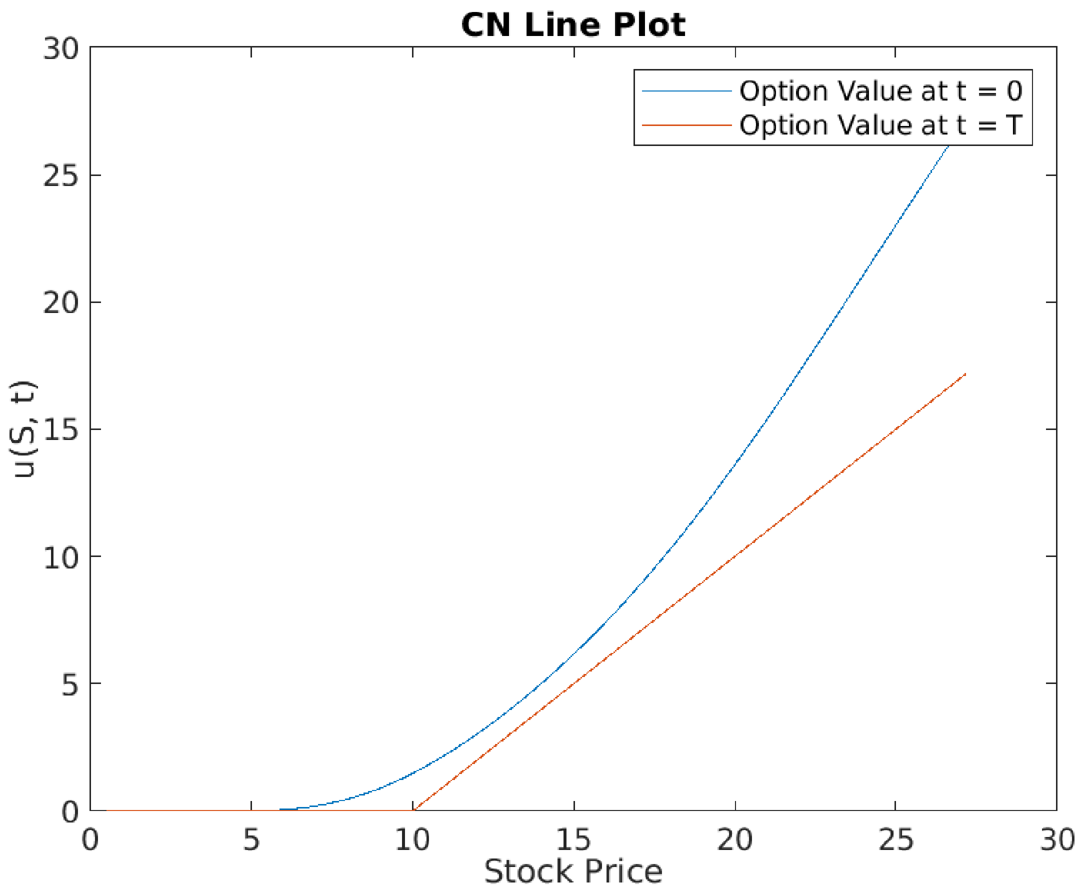
- For extreme values of the stock price, the difference between the two option values is more.
- This is because the boundary conditions are unknown. We don't have u(x,t) for $x \to \infty$ and $x \to -\infty$.

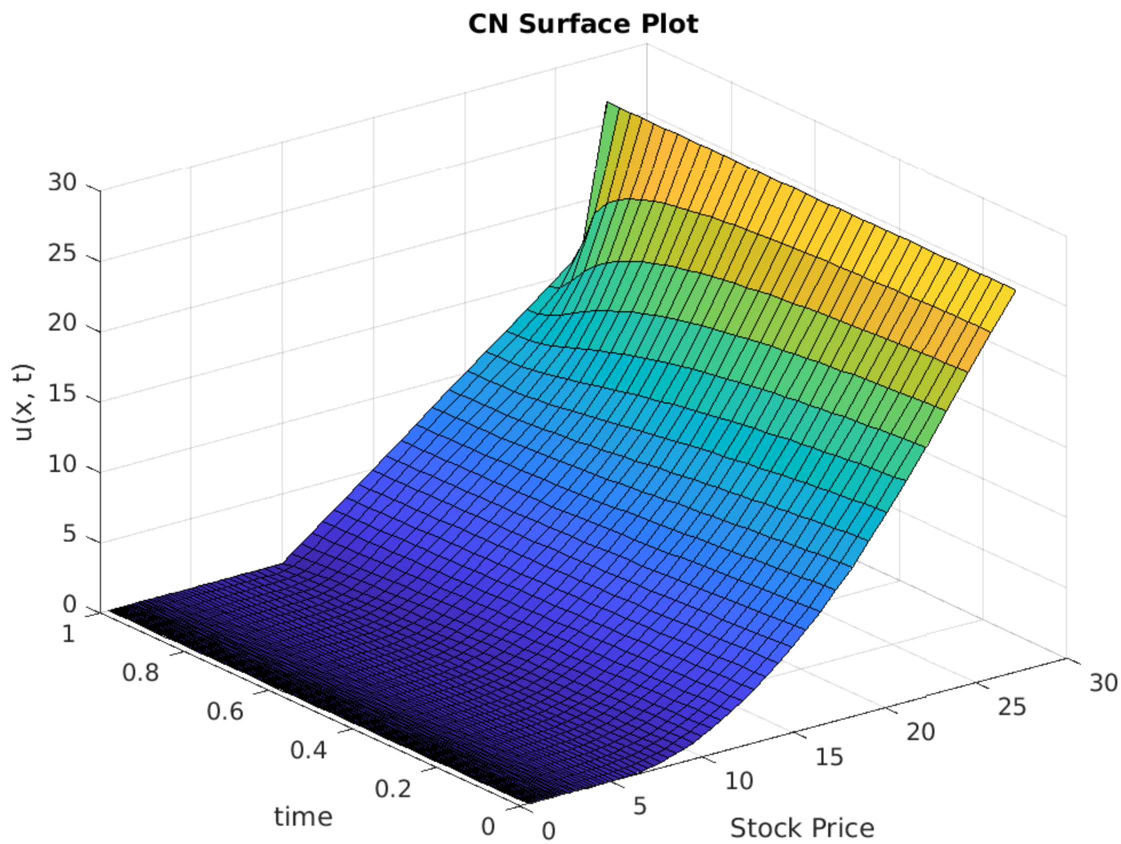



FTCS Surface Plot
u(x, t)
30
25
20
15
10
5
0
1
0.8
0.6
0.4
0.2
0
time
0
5
10
15
20
25
30
Stock Price

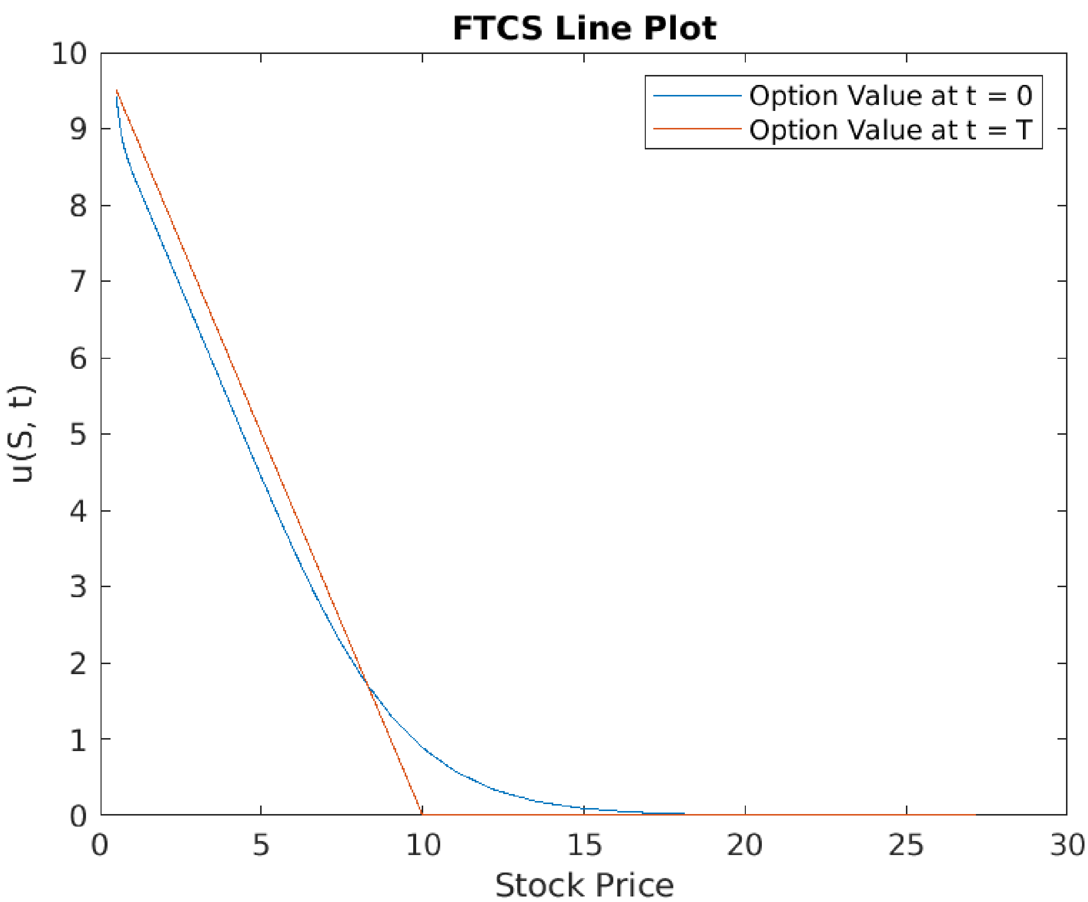

BTCS Line Plot
Option Value at t = 0
Option Value at t = T
u(S, t)
Stock Price
0
5
10
15
20
25
30

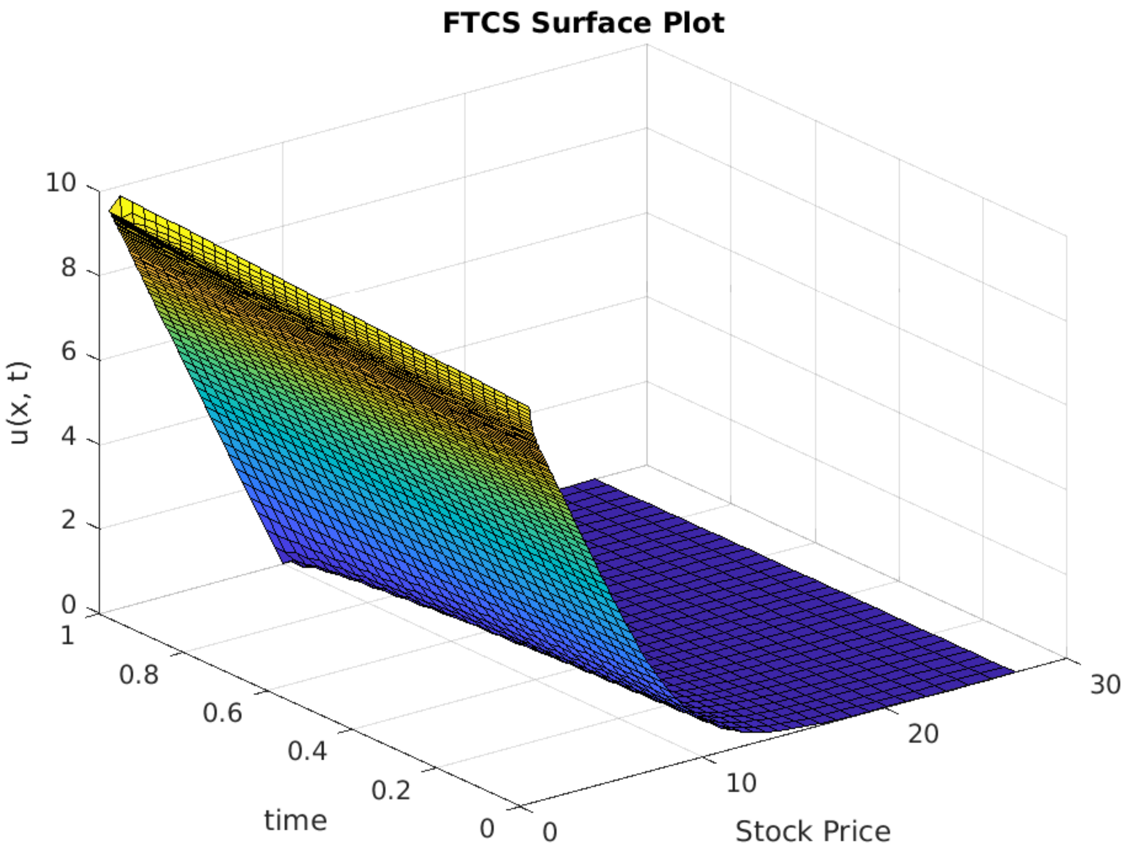

BTCS Surface Plot
u(x, t)
30
25
20
15
10
5
0
1
0.8
0.6
0.4
0.2
0
time
0
5
10
15
20
25
30
Stock Price


CN Line Plot
Option Value at t = 0
Option Value at t = T
u(S, t)
Stock Price
0
5
10
15
20
25
30


CN Surface Plot
u(x, t)
30
25
20
15
10
5
0
1
0.8
0.6
0.4
0.2
0
time
0
5
10
15
20
25
30
Stock Price

Question 2


FTCS Line Plot
Option Value at t = 0
Option Value at t = T
u(S, t)
Stock Price
0
1
2
3
4
5
6
7
8
9
10
0
5
10
15
20
25
30


FTCS Surface Plot
u(x, t)
10
8
6
4
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0
1
0.8
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0.2
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time
0
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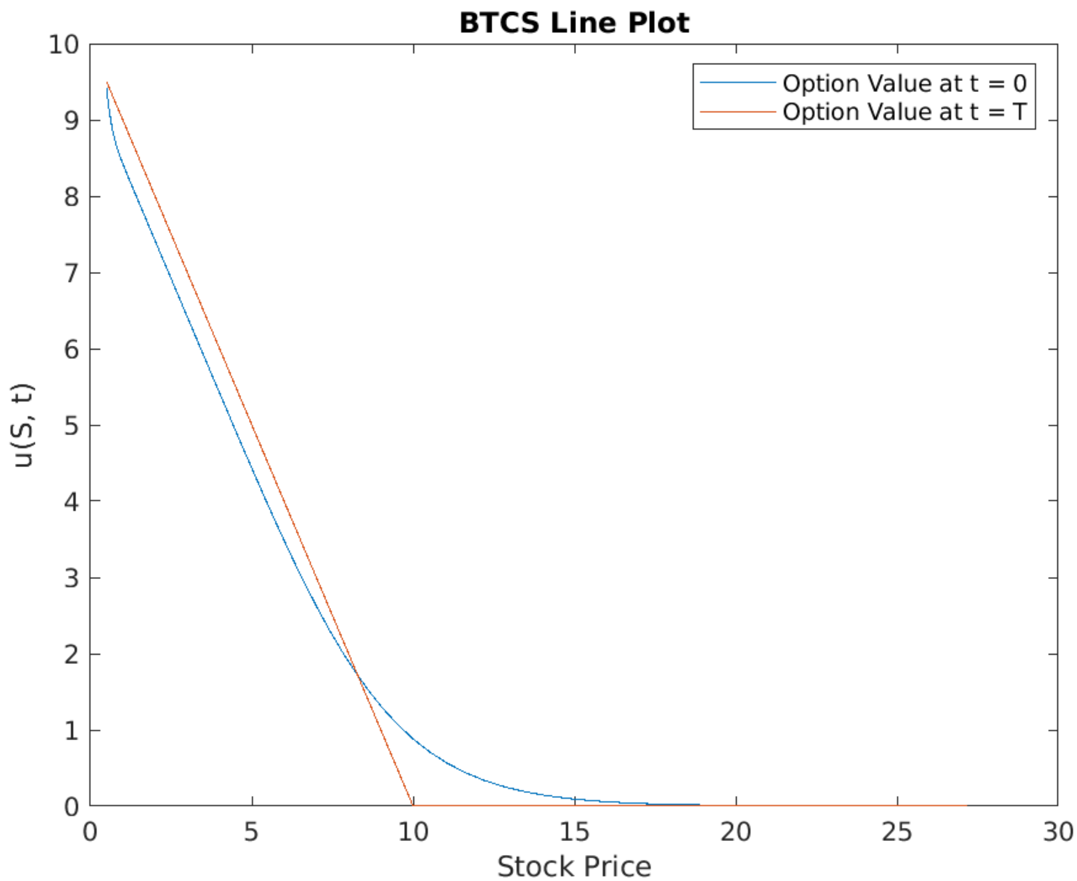
Stock Price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Option Value at t = 0
Option Value at t = T
u(S, t)
Stock Price
0
1
2
3
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6
7
8
9
10
0
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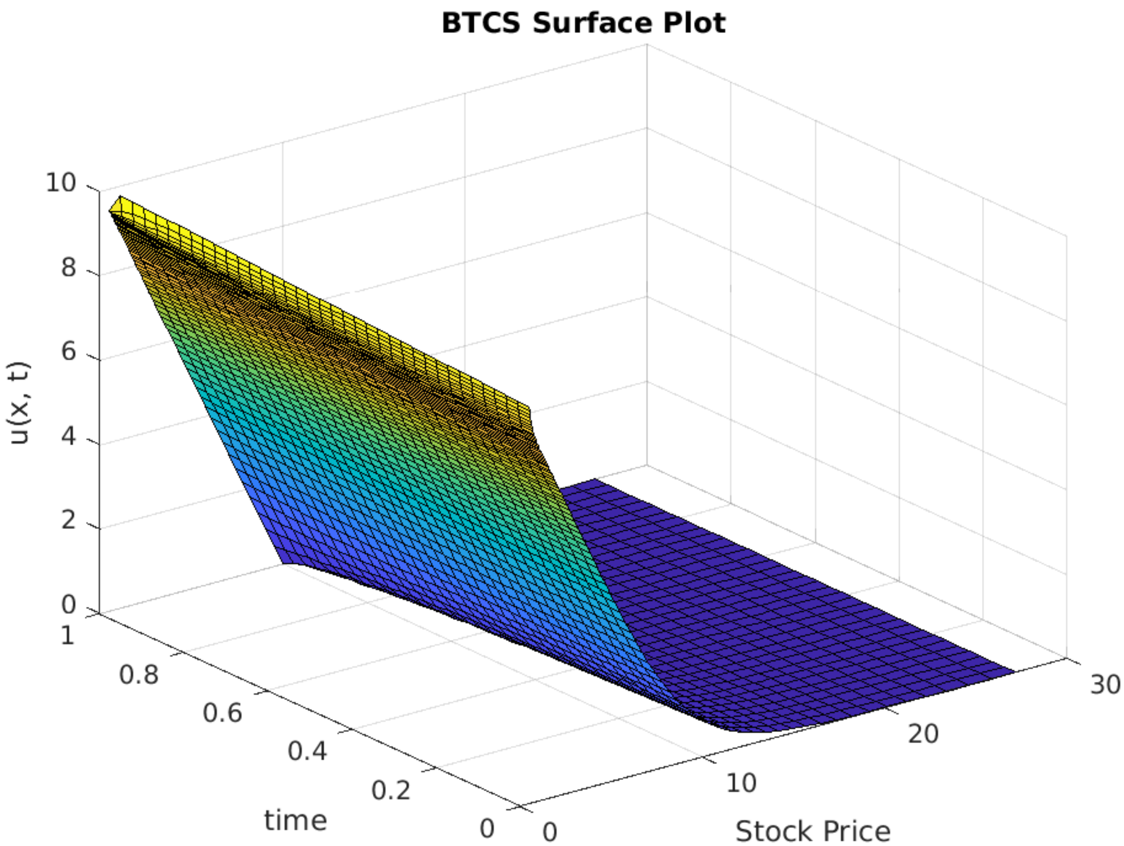
10
15
20
25
30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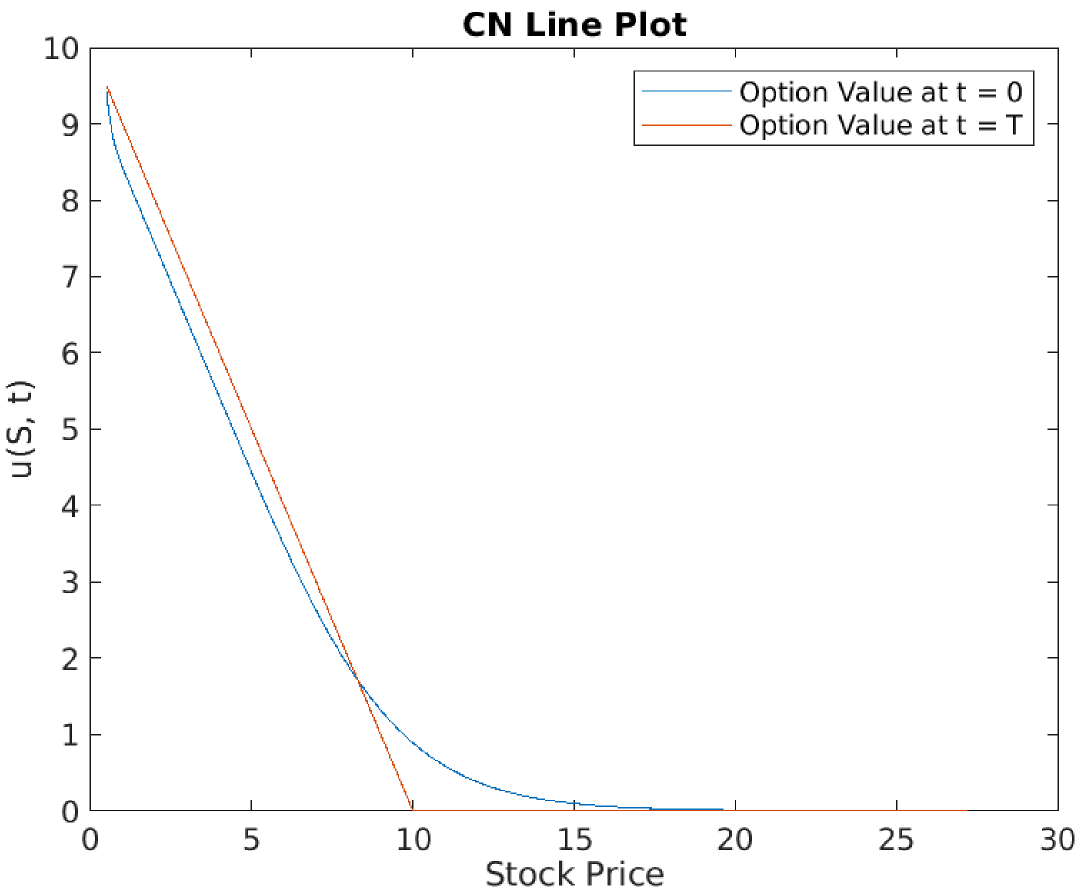
u(x, t)
10
8
6
4
2
0
1
0.8
0.6
0.4
0.2
0
time
0
10
20
30
Stock Price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Option Value at t = 0
Option Value at t = T
u(S, t)
Stock Price
0
5
10
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20
25
30
1
2
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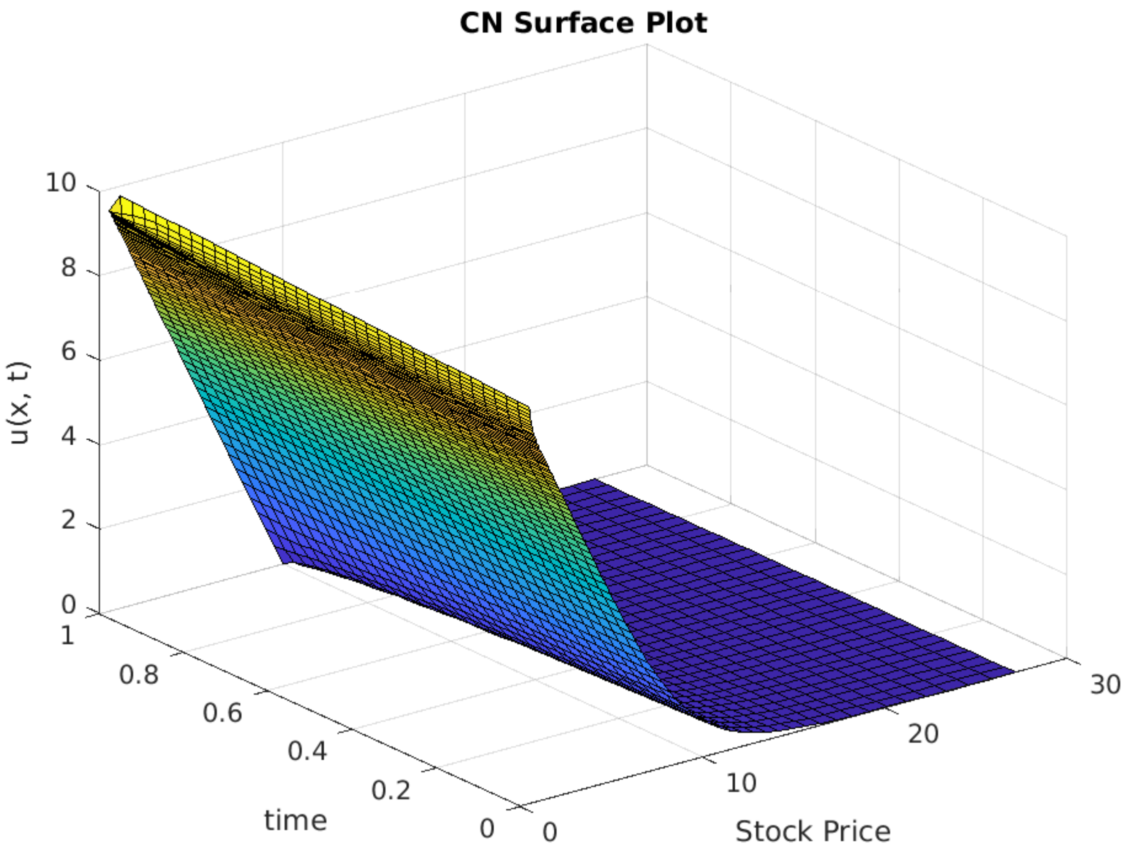
4
6
7
8
9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Stock Price