Solutions to Even-numbered Problems

T503-AFLE Derivatives

Solutions to Even-numbered Problems

Please note that these solutions were determined with rounding and will differ from solutions that use the Z-table.

Chapter 1

1.4.2: 117.27
1.4.4: 100
1.4.6: 2
1.4.8: E

Chapter 2

2.5.2: 6.24%
2.5.4: 13.93
2.5.6: 1 068.94
2.5.8:
a) Final profit for arbitrage strategy: 2.7550
b) Final profit for arbitrage strategy: 4.8869
2.5.10: C
2.5.12: 1.28
2.5.14: 186 963.594

Chapter 3

3.5.2: -27.0368
3.5:4:
(A) Yes
(B) Yes
(C) No
(D) No
(E) Yes
3.5.6: C
3.5.8: 105.5932
3.5.10: 20.9955
3.5.12: $38.33 < S(1) < 39.99$
3.5.14: Final profit for arbitrage strategy: 1.0873
3.5.16: Stock price = 41.0554, Final profit = 0.7912
3.5.18: 46.5928
3.5.20: B
3.5.22: 2.1573
3.5.24:
(A) Yes
(B) No
(C) No
(D) Yes
(E) Yes
3.5.26: 11.33
3.5.28: C(45, 3/12) = 3.5365
3.5.30: 36.4 < S(2) < 52.19
3.5.32: S(1) = 977.04 or S(1) = 1,038.41
3.5.34: 10.3853

Chapter 4

4.6.2: We have to buy 210 shares of the stock and borrow $9,772.2441$ to set up the replicating portfolio.
4.6.4: The fair price of the bear spread is 6.44. (You still have to derive the arbitrage strategy)
4.6.6: Possible values of x are 96 and 120.
4.6.8: The price of the strangle is 6.6810.
4.6.10: The price of the straddle is 248.57.
4.6.12: The price of the chooser is 33.7096.
4.6.14: The price of the offer is 783.15.
4.6.16: The two option prices should be identical, both equal to 16.247.
4.6.18: $P_{II} - P_I = 0.6993$.
4.6.20: The price of the warrant is 1.7.
4.6.22: The price of the Bermudan call is 0.1091.
4.6.24: OMIT THIS QUESTION
4.6.26: OMIT THIS QUESTION

Chapter 5

5.3.2:
a) 0.52302
b) 228.12
c) 111.0711
d) 68.40
e) 3,823.96
5.3.4: 157.17
5.3.6: 103.18
5.3.8: (76.12, 266.83)

Chapter 6

6.4.2: 59.7263
6.4.4: 6.8616
6.4.6: -3.27
6.4.8: 1.8932
6.4.10: 0.00767
6.4.12: 19185
6.4.14: 15.2345
6.4.16: 3.47
6.4.18:

Call	
Greek	Sign
Delta	Positive
Gamma	Positive
Theta	Sometimes positive and sometimes negative
Vega	Positive
Rho	Positive
Psi	Negative

Put	
Greek	Sign
Delta	Negative
Gamma	Positive
Theta	Sometimes positive and sometimes negative
Vega	Positive
Rho	Negative
Psi	Positive

6.4.20: $\Gamma \to +\infty$ as $T \downarrow 0$ if $S = K$ and $\Gamma \to 0$ as $T \downarrow 0$ if $S \neq K$.
6.4.22: (I will not provide this answer.)
6.4.24:

CALL OPTION		
	True Val	Z-Table
Fair Value	0.056676	0.056783
Delta	0.491691	0.492787
Vega	0.405358	0.405326
Theta	-0.0335	-0.03348
Rho	0.400014	0.400921
Epsilon	-0.44252	-0.44351
Gamma	2.502211	2.502011
Omega	10.41049	10.41414

6.4.26: $\sigma = 0.2$
6.4.28: 2.9432
6.4.30: 1.4459

Chapter 7

7.4.2: -37.12
7.4.4: -18.16
7.4.6: Only E).