

Unit 8 - Week 6: Derivative pricing by replication in binomial model

Course outline

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Assignment 6

The due date for submitting this assignment has passed. **Due on 2019-09-11, 23:59 IST.**
As per our records you have not submitted this assignment.

1) Consider the binomial asset pricing model with parameters $S_0 = 10$, $r = 0.1$, $u = 2$ and $d = 0.5$. Then the value of $S_3(HHH)$ equals:

No, the answer is incorrect.
Score: 0

Accepted Answers:
(Type: Numeric) 80

1 point

2) Consider the binomial asset pricing model with parameters $S_0 = 90$, $r = 0.05$, $u = 1.1$ and $d = 0.9$. A European call option with expiration after one time period with this risky asset as the underlying has the strike price of K . Then which of the following values cannot be the values of K under the case of $S_1(T) < K < S_1(H)$?

- (A) 75
 (B) 92
 (C) 103
 (D) 104

No, the answer is incorrect.
Score: 0

Accepted Answers:
(A) 75
(C) 103
(D) 104

1 point

3) Consider the binomial asset pricing model with parameters $u = 1.2$ and $d = 0.8$. Then which of the following values of r is(are) allowable in this model, so as to satisfy the no-arbitrage condition?

- (A) - 0.3
 (B) 0
 (C) 0.1
 (D) 0.15

No, the answer is incorrect.
Score: 0

Accepted Answers:
(B) 0
(C) 0.1
(D) 0.15

4) Consider the binomial asset pricing model with parameters $r = 0.4$, $u = 1.5$ and $d = 0.7$. Then the risk-neutral probability measure (upto three digits after decimal places) \tilde{p} equals:

No, the answer is incorrect.
Score: 0

Accepted Answers:
(Type: Numeric) 0.875

1 point

5) State whether the following statement is TRUE or FALSE:

When the binomial model is used in replication strategy for pricing of derivatives, then the value of $X_0 - \Delta_0 S_0$ can be negative.

- (A) True
 (B) False

No, the answer is incorrect.
Score: 0

Accepted Answers:
(A) True

1 point

6) The number of possible distinct values of $S_2(\omega_1\omega_2)$ ($\omega_1, \omega_2 \in \{H, T\}$) in the binomial model equals:

- (A) 2
 (B) 3
 (C) 4
 (D) 5

No, the answer is incorrect.
Score: 0

Accepted Answers:
(B) 3

7) Consider the binomial asset pricing model with parameters $S_0 = 90$, $r = -0.05$, $u = 1.1$ and $d = 0.9$. Consider a European call option with expiration after two time steps ($n = 2$) from the initial time, with this risky asset as the underlying, and the strike price of $K = 85$. Then the value of $\Delta_1(T)$ equals:

No, the answer is incorrect.
Score: 0

Accepted Answers:
(Type: Range) 0.22,0.28

2 points

8) Consider an European option with expiration after three time steps ($n = 3$) from the initial time in the binomial asset pricing framework. Then which of the following statement(s) is(are) CORRECT?

- (A) $V_2(HH) = \frac{1}{1+r} [\tilde{p}V_3(HHH) + \tilde{q}V_3(HHT)]$
 (B) $V_2(TH) = \frac{1}{1+r} [\tilde{q}V_3(THT) + \tilde{p}V_3(THH)]$
 (C) $V_1(H) = \frac{1}{1+r} [\tilde{p}V_2(HH) + \tilde{q}V_2(TH)]$
 (D) $V_1(T) = \frac{1}{1+r} [\tilde{p}V_2(TH) + \tilde{q}V_2(TT)]$

No, the answer is incorrect.
Score: 0

Accepted Answers:

- (A) $V_2(HH) = \frac{1}{1+r} [\tilde{p}V_3(HHH) + \tilde{q}V_3(HHT)]$
(B) $V_2(TH) = \frac{1}{1+r} [\tilde{q}V_3(THT) + \tilde{p}V_3(THH)]$
(D) $V_1(T) = \frac{1}{1+r} [\tilde{p}V_2(TH) + \tilde{q}V_2(TT)]$

2 points