Exercise 1. [5]

Samar buys 76–strike call option of XYZ stock for 6.4133 per share. The nominal amount of this call option is 100 shares. The expiration date is one year from now and the annual effective interest rate is 6%.

a) Calculate Samar's profit function and give the graph.
b) Calculate Samar's profit for the following spot prices at expiration: 50, 80.
c) Calculate Samar's minimum and maximum profit.
d) Find the spot price at which Samar's profit is positive.

Answer

Exercise 2. [5]

The current stock price of a non-dividend paying stock is 50. The continuously compounded annual risk-free interest rate is 4%. A 45-strike European call option on the stock with 6 months to expiration has price 6.75.

What price must the stock be in 6 months so that buying the call and selling the call have the same profit.

Answer

Exercise 3. [4]

The current price of XYZ stock is 160 per share. The annual effective interest rate is 7%. The price of a one–year European 200–strike put option for XYZ stock is 20 per share. Find an arbitrage strategy and the minimum profit per share.

Answer

Exercise 4. [5]

Consider two European call options on a stock, both with expiration date exactly two years from now. One call option has strike price 85 and the other one 95. The price of the 85–strike call is 8. The price of the 95–strike call option is 20. The risk–free continuous rate of interest is 5%.
Find an arbitrage portfolio and its minimum profit.
Answer

Exercise 5. [6]

You are given the following information on 6-month European calls and puts on a non-dividend paying stock:

Strike	Call Premium	Put Premium
58	4.052	3.675
62	2.524	5.913

You enter long positions on two 58-strike put options and one 62-strike call. The risk-free continuous interest rate is 12%.

a) Draw the payoff and the profit diagram of your combined position.
b) Calculate the maximum and minimum payoff.
c) Calculate the profit if the stock price at expiration is 60.

Answer

EXTRA PAGE