QUESTION 1

An investor constructs a ratio spread on a stock using 1-year call options. She buys one 70-strike option and sells two 85-strike options. You are given:

- The continuously compounded annual risk-free interest rate is 0.03.
- Call option prices are 7.19 for a 70-strike option and 3.12 for a 85-strike option.

Let S be the price of the stock at the end of one year.

Find maximum S that will guarantee positive profit.

- ○ 104.0211
- ○ 84.0211
- ○ 100.9789
- ○ 99.0211
- ○ 70.9789

QUESTION 2

An investor is speculating on the volatility of an index. The current price of the index is 1000. The investor buys a 3-month straddle. You are given:

- A 3-month at-the-money call option costs 70.45.
- A 3-month at-the-money put option costs 59.96.
- The current price of the index is 1000.
- The effective annual risk-free rate is 0.06.

Let S be the price of the index at the end of 3 months.

Determine the range of values of S for which the investor's profit is positive.

- ○ S < 901.41
  S > 1098.59
- ○ 901.41 < S < 1098.59
- ○ S < 867.68
  S > 1132.32
- ○ 856.68 < S < 1142.32
- ○ 869.59 < S < 1130.41

QUESTION 3

The current price for a stock index is 1,000. The following premiums exist for various options to buy or sell the stock index six months from now:

Strike Price	Call Premium	Put Premium
950	120.41	51.78
1000	93.81	74.20
1050	71.80	101.21

Strategy I is to sell the 1,050-strike call and to buy the 950-strike call.

Strategy II is to buy the 1,050-strike put and to sell the 950-strike put.

Strategy III is to buy the 950-strike call, sell the 1,000-strike call, sell the 950-strike put, and buy the 1,000-strike put.

Assume that the price of the stock index in 6 months will be between 950 and 1,050. Determine which, if any, of the three strategies will have greater payoffs in six months for lower prices of the stock index than for relatively higher prices.

○ I and III

○ I and II

○ II only

○ None

○ II and III

QUESTION 4

You are interested in borrowing $10,000 for one year by using a box spread. You are given the following option prices:

Strike Price	Call Premium	Put Premium
30	9	1
40	3	6

The continuously compounded risk-free Interest rate is 0.06.
One unit of the box spread consists of a long 30-40 bull spread of calls and a long 40-30 bear spread of puts.
Calculate the number of units of the box spread needed to achieve the financing goal, and determine whether they are bought or sold.

○ Sell 1099.19 units

○ Sell 1061.57 units

○ Buy 1021.47 units

○ Buy 1005.71 units

○ Sell 909.09 units

QUESTION 5

Helen owns a collared stock.

You are given:

(i) The price of the stock is 60.

(ii) The collar has strike prices 60 and 70.

(iii) The collar expires in one year.

(iv) The stock pays no dividends.

(v) The continuously compounded risk-free Interest rate is 0.02.

(vi) The price of a 60-70 bull spread with calls is 6.29.

Determine the price of the collar .

○ 5.1

○ 6.6

○ 3.5

○ 0.2

○ 1.3

QUESTION 6

An investor wishes to purchase a butterfly spread consisting of a 30-42 bull spread with puts and a 42-50 bear spread with calls.

The spread has 60 long puts.

Determine the number of long calls.

○ 40

○ 50

○ 70

○ 90

○ 60

QUESTION 7

Determine which statement about zero-cost purchased collars is FALSE. Assume   .

○ The call option can be at-the-money.

○ There are an infinite number of zero-cost collars.

○ The strike price on the put option must be at or below the forward price.

○ The put option can be at-the-money.

○ A zero-width, zero-cost collar can be created by setting both the put and call strike prices at the forward price.

QUESTION 8

Determine which of the following strategies creates a ratio spread, assuming all options are European.

☐ Buy a one-year call, and sell a three-year call with the same strike price.

☐ Buy a one-year call, and sell a three-year call with a different strike price.

☐ Buy a one-year call, and sell three one-year calls with a different strike price.

☐ Buy a one-year call, and sell three one-year puts with a different strike price.

☐ Buy a one-year call, and buy three one-year calls with a different strike price .