Finance 4366: Options class problems, February 5, 2019

Problem #1

Suppose that you are interested in synthetically replicating a share of (a non-dividend paying) stock by implementing a trading strategy involving a call option, a put option, and a riskless discount bond. The exercise price for the two options is \$50, and the riskless rate of interest is 5%. The options are both European and expire 1 year from today. The call and put options both currently trade for \$4 each.

A. Describe a trading strategy involving the call, the put, and the riskless bond that will enable you to synthetically replicate a share of stock.

B. What is the value of your synthetic share of stock?

C. Suppose the actual stock currently sells for \$45. Describe an arbitrage strategy that will enable you to make riskless profits with zero net investment and calculate the profit that you would earn from implementing such a strategy.

Problem #2

Suppose the riskless rate of interest is 0%, the price of a riskless bond is \$100, and the price of a (non-dividend paying) stock is \$100. In the future, only two equally probable outcomes exist for the economy, good and bad. In the good state, the stock is worth \$150, whereas in the bad state, the stock is worth \$75.

A. What is the "no arbitrage" price of a call option on the stock with an exercise price of \$100?

B. What is the "no arbitrage" price of a put option on the stock with an exercise price of \$100?