Financial Mathematics classwork (2024/9/19)

Name:

Student ID:

Suppose a stock pays a dividend $4 after 5 months. The initial stock price is *S*(0) = $100 and the continuously risk free interest rate is *r* = 3%. Suppose the underlying asset of the forward contract is stock and the expiration date of the contract is 1 year.

(a) Calculate the (no arbitrage) forward price.

(b) Suppose the forward price is $97 and you can buy/sell 1 stock at *t* = 0. Construct an arbitrage strategy.

Solution



(b) At *t* = 0.

To be buyer of a forward contract with forward price $97.

Borrow a stock and sell it for $100.

Deposit $100 in a bank with continuously risk free interest rate *r* = 3%.

At *t* = 5/12.

Pay $4 to the stock owner as dividend.

I have  in my bank account.

At *t* = 1.

I have  in my bank account

I pay $97 to the seller of forward contract for 1 stock. Return the stock to the stock owner.

I will get 