Math Finance, Homework 8, Winter 2006
Due Wednesday, March 1, 2006

1. Exercise 5 from Section 2.4 of the text.

2. Consider model inputs from Exercise 2 in Section 2.4 of the text for an American call option. In Homework 7, you found the superhedging strategy for this contingent claim.

   (a) Find the arbitrage free initial price.

   (b) What strategy (stopping time) should a buyer use to prevent the seller from having an advantage?

   (c) Suppose that the option is initially priced \$2 below the arbitrage free price of the American call option. Give an example of a trading strategy that is an arbitrage opportunity and verify that your example is an arbitrage opportunity.

   (d) Suppose that the option is initial priced \$2 above the arbitrage free price of the American call option. Give an example of a trading strategy that is an arbitrage opportunity and verify that your example is an arbitrage opportunity.

3. Consider the model inputs from Exercise 6 in Section 2.4 of the text. In Homework 7, you found the superhedging strategy for this contingent claim.

   (a) Find the arbitrage free initial price.

   (b) What strategy (stopping time) should a buyer use to prevent the seller from having an advantage?

   (c) Suppose that the option is initially priced \$1 below the arbitrage free price of the American call option. Give an example of a trading strategy that is an arbitrage opportunity and verify that your example is an arbitrage opportunity.

   (d) Suppose that the option is initially priced \$1 above the arbitrage free price of the American call option. Give an example of a trading strategy that is an arbitrage opportunity and verify that your example is an arbitrage opportunity.

4. Does there seem to be a call-put parity relation for the American options? Explain.