

**FINA4468: Financial Innovations- Winter 2016-17**  
**Assignment 2**

**Due:** Monday, March 20, 2017, in class

**This assignment can be done by 1-2 persons.**

**Q1 (20%):**

Stock AAPL (Apple Inc.) sells for 98.15 now. The prices of a European call and European put on TD that expire in three months and have a strike price of \$97.5 are \$6.10 and \$5.85, respectively. No dividend payment is expected. The continuously compounded risk-free interest rate is 4% per annum. Explain the arbitrage opportunities.

**Q2 (80%):**

The following option prices were observed for BMO stock on March 1, 2016. The stock is priced at \$56.60. The expirations are April 22, June 17, and September 16. The risk free rates are 0.022, 0.025, and 0.028, respectively, with continuously compounding.

Strike	Call			Put		
	Apr	Jun	Sept	Apr	Jun	Sept
50	6.90	7.20	8.05	0.48	1.33	2.18
55	3.05	3.80	4.40	1.40	2.65	3.85
60	0.58	1.35	2.08	4.55	5.85	6.65
65	0.22	0.28	0.70	9.80	9.80	10.80

1. (10%) Computer the intrinsic values and time values of the following options. Treat these options as American options.
  - a. Apr 60 call
  - b. Jun 55 call
  - c. Sept 65 call
  - d. Apr 50 put
  - e. Jun 60 put
  - f. Sept 65 put
  
2. (10%) Computer the lower bounds of the following calls and puts. Treat these options as European options.
  - a. Apr 60 call
  - b. Jun 55 call
  - c. Sept 65 call
  - d. Apr 50 put
  - e. Jun 60 put
  - f. Sept 65 put