Homework 3
Due: 3/6/2014

1. Solve the Example 1, 2 & 3 of lecture 8. Test your class in a separate .cpp. Recall that you are supposed to construct at least these members and functions for each class:
   - 2 Constructors: Default and with user-defined values.
   - Destructor.
   - Copy Constructor.

2. For Example 1, you should also include member functions calculating option price (both Call option and put option), Delta, and Vega.

3. For example 2, the user defined constructor should have a given interest rates vector \( r_1, \ldots, r_n \) and time vector \( t_1, \ldots, t_n \) as inputs. And you should defined member functions calculating any interest rate at give time \( t \), discount factor, and forward rates.

4. For Example 3, your class should include members that calculate the everything described in the example.

5. It is better if you may think about how to handle possible errors coming from mistaking inputs or initializations (for example, unreasonable term structure of interest rates, non-increasing time vector \( (t_1, \ldots, t_n) \), negative interest rates, inconsistence between market bond price and coupon values, and so on).

6. Test everything you defined in your main function. The important results such as yields, forward rates, option prices, greeks, and so on, should be printed out using "cout".