**Problems for Lecture 2**

**Problem 1**

1. A zero-coupon bond with 3 years to maturity.



1. A bond with coupon rate 6% and 2 years to maturity.



1. A bond with coupon rate 8% and 4 years to maturity.



**Problem 2**

For the 6-month bond X with semiannual coupon rate of 4%, the price is written as



The 6-month spot rate is calculated as .

For the 1-year bond Y with semiannual coupon rate of 6%, the price is written as



Therefore, the 1-year spot rate is calculated as .

**Problem 3**

For the 1-year bond A with zero coupon, the price is written as



The 1-year spot rate is calculated as .

For the 2-year bond B with annual coupon rate of 5%, the price is written as



Therefore, the 2-year spot rate is calculated as .

For the 2-year bond C with annual coupon rate of 7%, the price can be calculated as



The bond C is therefore overpriced at $103.370 in the market. Since Jerry is buying and selling the bonds, we can construct an arbitrage and earn a free lunch.