**Math of Finance 6740 Spring 2016**

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**Worksheet 1 for Presentation this Friday 02/19**

1. Let be the t = 0 price of a risky asset and where r > 0 is the riskless interest rate in a 2 by 2 single period market in payoff format for one riskless and one risky asset. Construct explicitly an arbitrage for this market.
2. Consider the 3 by 3 incomplete market M = where 0 < r < s < 1, and the t = 0 prices of the three assets are 1, 1, 1. Does this market have an arbitrage. Construct one explicitly if there is one.
3. Give an explicit example of a 2 by 2 market (M,
4. For the incomplete 3 by 3 market in Q2, find a risk neutral probability vector q = or show there is none.
5. For the generic 2 by 2 market (M, that is arbitrage free (AF), calculate the prices of the claims and and then price the generic claim where a and b are any real numbers.
6. Calculate the expected values of the claims and under the risk neutral probability q = for the AF generic 2 by 2 market in Q5.