Spring 2013: Final B for 1:00 Class   Name _____

Short Answer (15 points each)

1. You have calculated the present value of an asset that will generate cash flows forever as equaling $500. However, after correcting a mistake, you find that the true value is less than $500. What are the names (not the symbols) of the variables you might have lowered when correcting your mistake?

2. Assume that markets are perfect except for the existence of corporate taxes. Assume also that you have calculated that the unlevered value of the firm equals $100,000 and that the levered value of the firm equals $105,000. However, due to an error the value you calculated for the levered value of the firm is too high. What are the names (not the symbols) of the variables you might have reduced when correcting your error?

3. Soon after calculating the correlation between Kellogg and General Motors as equaling 0.3, you discover an error in your numbers that lead to you revising the correlation lower. What changes in your numbers might have led to this revision? Note: use words not symbols.

4. Your friend has come to you all excited about finding an arbitrage opportunity. However, you point out to your friend that no transaction costs are included. What are the names of transaction costs your friend should include before concluding that arbitrage is possible?

5. When calculating the value of a call, you forgot to adjust the stock price for dividends being paid prior to the option's expiration. How will fixing your mistake affect the number you have calculated for the value of the call?

6. Assume you have estimated the value of a bond by valuing a risk-free bond and a put on the firm's assets. However, your boss has pointed out that your estimate of the bond value is too high because you used an incorrect number for the standard deviation of returns on the firm's assets. Is the correct number for standard deviation higher or lower than your initial, wrong number?

7. After finishing your analysis of the unlevered net income of a new project your firm is considering, you realize you have made a mistake. You also realize that when you correct your error, your new unlevered net income will be lower. What are the names (not the symbols) of the variables you might have raised when correcting your error?

8. Assume you have found an arbitrage opportunity that involves shorting a stock, buying the market, and buying risk-free bonds. Assume that before you set up the arbitrage trades, interest rates fall (but nothing else changes). Will your arbitrage profit rise or fall as a result of the change in interest rates?

9. Assume that based on your analysis, your firm has decided to invest in a project. However, after presenting your analysis you discover that you have failed to consider in your analysis that the project can be expanded if it is successful. Can fixing this omission lead you to change your recommendation on whether to undertake the project?

10. Under what conditions can a short sale of stock lead to a loss?

Problems (75 points each)

1. Given the following prices, what set of transactions today will generate an arbitrage profit today? Show that the conditions of arbitrage are met if Wal-Mart's stock ends up at $85 and if Wal-Mart's stock ends up at $70. Note: Assume all options are on Wal-Mart stock, have a strike price of $80, and expire on July 19 (72 days from today).
   Price of: Wal-Mart's stock = $79.25, call = $1.11, put = $2.98, risk-free interest rate = 0.035% (less than 1%).

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2. Using the following returns, set up the calculations needed to determine the beta of Game Stop (GME) and the beta of a portfolio with $400,000 invested in Game Stop and $100,000 invested in Johnson & Johnson which has a beta of 0.1. Note: You do not need to solve anything.

Return on:

Year	GME	S&P500
2012	+ 3%	+ 14%
2011	+ 11%	+ 2%
2010	+ 7%	+ 20%
2009	– 18%	+ 30%

Use the following to answer questions 3 and 4

Assume that TuitionMax is considering whether or not to build a new distribution facility at a cost of $500 million. TuitionMax bought the land on which the new facility will be built five years ago for $15 million. It could sell the land today for $20 million (after taxes). TuitionMax estimates that the new facility will generate its first net, after-tax cash flow of $75 million five months from today. After this initial cash flow, cash flows would occur annually and would grow by 1% per year. The final cash flow would occur 20 years and five months from today.

TuitionMax estimates that the facility can be expanded at any time over the next five years at a cost of $25 million. The facility would generate net, after-tax cash flow of $4 million per year. The first cash flow would occur one year after the expansion and would continue through 20 years from today. In addition, TuitionMax estimates that it can sell the facility for $60 million at any time over the next three years.

TuitionMax estimates that the beta of the facility is 1.3 and that the beta of the expansion is 1.2. The beta of the firm's existing assets is 1.0. The standard deviation of returns on TuitionMax's existing assets is 35%. The standard deviation of returns on the new facility over the next three years is 40%, over the next five years is 42%, and over its entire life is 45%. The standard deviation of returns on the possible expansion is 50% over the next three years, 53% over the next five years, and 55% while the expansion is in operation.

The market risk premium equals 7% and the risk-free rate equals 2%.

3. Set up the calculations needed to determine the net present value of building the facility ignoring the impact of any options on the value of the project. Note: You do not need to solve anything.

4. Set up the calculations needed to determine the impact being able to sell rather than to operate the facility on the value of the facility to TuitionMax. Note: You do not need to solve anything.

5. HondaEclipsed Inc has a 35% chance of earning $200 million, a 20% chance of earning $300 million, and a 45% chance of earning $400 million. Determine HondaEclipsed optimal leverage if the corporate tax rate is 30%, the personal tax rate on equity income is 10%, and the personal tax rate on interest income is 25%. Note: Calculations required.

6. Frankenstein Beverage's current stock price equals $45 per share. Over each of the next two years, Frankenstein's stock price will either increase by $6 per share or will fall by $4 per share. Calculate the value of a put on Frankenstein with a strike price of $50 if the risk-free rate is 2%. Note: Calculations required.