

Problem Set 10

Corporate Finance, Sections 001 and 002

Suggested problems:

1. Construct payoff and profit tables on expiration to show what position in IBM puts, calls and/or underlying stock best expresses the investor's objectives described below. Assume IBM currently sells for \$150 so that profit tables between \$100 and \$200 in \$10 increments are appropriate. Also assume that "at the money" puts and calls cost \$15 each. (As always, the profit tables ignore the time value of money.)
 - (a) An investor wants upside potential if IBM increases but wants losses no greater than \$15 if prices decline.
 - (b) An investor wants to capture profits if IBM declines in price but wants a guaranteed limited loss if prices increase.
 - (c) An investor wants to capture profits if IBM declines in price and is ready to accept unlimited losses if prices increase. [2 answers are possible]
 - (d) An investor already owns IBM (at a price of \$150) and wants to protect against price declines but wants to retain upside if prices rise. Only one transaction is permitted here.
2. Suppose a European call option has an exercise price of \$100 and the underlying asset has a price of \$100. The option expires in 1 year and the continuously compounded interest rate is 6%. Assume the underlying asset does not pay dividends.
 - (a) What is the intrinsic value of this option?
 - (b) What will the option be worth on expiration if the stock price in 1 year is \$110? What if the stock price is \$90?
 - (c) What is the lower bound on the price of this option today?
 - (d) Assume that the value of the call is \$10. What is the value of a European put option with the same exercise price?
 - (e) Is the value of the American call option any different from the European call option? Why or why not?