Homework 2
Due Tuesday February 17, 2014
Economics of Sustainability
K Foster, Colin Powell School CCNY, Spring 2015

You are encouraged to form study groups to work on these problems. However each student must hand in a separate assignment: the group can work together to discuss the papers and comment on drafts, but each study group member must write it up herself/himself. When emailing assignments, please include your name and the assignment number as part of the filename.

1. What are the names of people in your study group?

2. Consider some discount rate calculations.
   a. If the interest rate is 5%, what is the discounted value of $10,000 in 3 years? (You can pick your annualizing frequency)
   b. If the interest rate is 1%, what is the discounted value of $10,000 in 3 years? (same frequency as before)
   c. If the interest rate is 10%, what is the discounted value of $10,000 in 3 years? (same frequency)
   d. At a discount rate of 7%, what is the present value of 3 payments made in 10, 12, and 15 years in the future? Calculate at annual compounding, semi-annual compounding, and continuous compounding.
   e. (extra) Consider a case where we use (something like) hyperbolic discounting. So to value $10m in 100 years, we use a discount rate of 0.5% from years 50-100, a discount rate of 1% for years 25-49, and a discount rate of 2% for years up to 25. What is the discounted value? What would be the discounted value at a flat rate of 1%? (Choose a frequency of annualizing)

3. Suppose a possible gas well site, currently untapped, could produce gas sufficient to turn a profit of $1m in 7 years. How much is the site worth now, if the discount rate were 9%? If the discount rate were 14% because of a greater riskiness? If there is a 50% chance that the rate is 9%, and a 50% chance that the rate is 14%, what is the well worth? What interest rate would give the same value (is it an average of 9% and 14%)?