AP/ECON 2300 FF   Assignment 2

due : Tuesday November 23 2010, 4:00 pm

answer all **5** questions : all count equally

1. If a person earned Y_P when young, and Y_F when old, how would her saving vary with the net rate of return r to saving, if her preferences could be represented by the utility function

$$u(C_P, C_F) = C_P^2 C_F$$

where C_P is her consumption when young and C_F her consumption when old?

2. A firm is considering setting up a mining operation. It estimates that it will cost 100 million dollars to set up the mine this year, and a further 126 million dollars to clean up the mine site when the mining is finished, two years from now. The mine is expected to earn to yield ore with a net value of 225 million dollars, which will all be extracted one year from now.

For what values of the annual interest rate would it be profitable for the firm to set up this mine?

3. A student is considering how much education to acquire. She has calculated that the present value of a person's lifetime earnings is defined by the following table, when the interest rate is 3% per year. [So if she were to stay in school for 3 years, she would earn a lifetime income, in present value, of $2,500,000, starting 3 years from now.]

If she wishes to maximize the net present value of her lifetime earnings (measured from today), how long should she stay in school, if the interest rate is 3% per year?

years schooling	PV of earnings
0	$2,000,000$
1	$2,200,000$
2	$2,360,000$
3	$2,500,000$
4	$2,600,000$
5	$2,680,000$
6	$2,750,000$
7	$2,810,000$
8	$2,840,000$
9	$2,850,000$
10	$2,850,000$

continued

4. If a person's preferences could be represented by the utility function

$$u(F, C) = FC^2$$

where F is her food consumption and C her clothing consumption, and if the price of food were 1, and her income was 60, what would be the equivalent variation to a fall in the price of clothing from 2 to 1/2?

5. A risk–averse expected utility maximizer has a utility function

$$u(W) = \sqrt{W}$$

She currently has wealth of 16 million dollars.

She has to choose between 2 alternative investments : she can only choose one of the two.

Investment #1 is risky. If it succeeds, she will quadruple her wealth. If it fails, she will lose 12 million dollars (from her original wealth of 16 million). She estimates that either outcome, success of failure, is equally likely.

Investment #2 is a sure thing, which will increase her wealth from 16 million dollars to X dollars, for sure.

If she is indifferent between the two investments, what must X be?