Economics 100A **Prof. Daniel McFadden**
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Microeconomic Analysis
PROBLEM SET 5
ANSWERS

1

a. Fred has an endowment that consists of $50 of money to spend on consumption and 50 hours of leisure, some of which he might sell for money. The money value of Fred's endowment bundle, including both his money allowance and the market value of his leisure time is therefore $300. Fred's budget line for leisure and consumption is like a budget line for someone who can buy these two goods at a price of $1 per unit of consumption and a price of $5 per unit of leisure. The only difference is that this budget line doesn't run all the way to the horizontal axis. So the budget is: C+$5L=300 from L=0 to 50; and L=50 afterwards.
b. Usual convex indifference curve.
c. Max U(C,L) subject to Budget Constraint. This is an usual C-D function and the optimal consumption bundle is (150, 30)
d. 30 hours of leisure implies 20 hours of labor supply.

2.

a. False. Substitution effect makes him consume less in period 1 and save more. For a saver, income effect works in opposite direction. Either effect could dominate.
b. True. The income and substitution effects both lead to more consumption in the second period.

3.

a. Stay the same. His demand for C1 is 0.5(m1+m2/(1+r))and m2=0 where m1 and m2 are today's and tomorrow's income respectively.
b. More. He saves the same amount, but with higher interest rates, he gets more back next period.
c. Less. Same reasoning as part a.

4.

a. Plan A: $450; plan B: $600 and plan C: $3,000
b. Plan A: 450-300=150; plan B: 600-500=100 and plan C: 3,000-7,500 = -4,500
c. If the interest rate is 10%, chooses plan A. if the interest rate is 5%, chooses plan B
d. If the interest rate is 10%, choose plan B. if the interest rate is 5%, chooses plan C
e. Note that if a stream of income is growing at x% and being discounted at y%, its present value should be the same as that of a constant stream of income discount at (y-x)%. Plan A, B and C's present value of fuel saving are $900, $1,200 and $6,000 respectively.

5.

a. $498
b. $248,004
c. $248,400
d. Certainty equivalent of his wealth is:$248,400, and the expected utility is $248,800^{1/2}$.