Microeconomics for Management - Yossi Spiegel

Problem set 3

Problem 1

Jack's consumes only apples and bananas. His utility function defined over the consumption of apples and bananas is $U(x_1,x_2) = x_1 x_2^2$, where x_1 is the quantity of apples and x_2 is the quantity of bananas. The price of apples is $p_1 = 1$ and the price of bananas is $p_2 = 2$. Jack's income is 12.

(a)   Compute Jack's optimal consumption bundle and show it in a diagram that has x_1 on the horizontal axis and x_2 on the vertical axis.

(b)   Now suppose that p_1 increases from 1 to 2. Repeat your answer to part (a).

(c)   Suppose Jack's optimal bundle in (a) is used as the basis for the consumer price index (the cost of leaving index that we discussed in class). What was the rate of increase in the price index?

(d)   How much extra income would Jack receive if his income is 100% indexed to the consumer price index that you computed in (c)? (Hint: How much extra income should Jack receive after the price increase in order to enable him to buy the bundle that you computed in part (a) when the prices are as in part (b)?)

(e)   Which bundle will Jack choose after receiving this extra income?

(f)   Is Jack better-off or worse off after receiving this extra income relative to his situation in part (a)? Show your answer in a diagram. (Hint: the extra income will lead to the "hypothetical" budget constraint that we showed in class).

Problem 2

Repeat your answer assuming that Jack's utility function is $U(x_1,x_2) = Min\{3x_1, 2x_2\}$. (Hint: you need to draw Jack's indifference curves in the (x_1, x_2) space and use this graph to find Bob's optimal bundle).

<u>Problem 3</u>

(a)   Compare the rate of increase in the consumer price index in Problems 1 and 2. Where
        is the rate of increase larger? Why?

(b)   Is there a way to tell if Jack is better off after receiving the extra income in Problem 1
        or in Problem 2? Explain your answer.