ECON 201/301, (Spring 2014) Department of Economics, SFU
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Midterm #2

Please solve ALL of the problems below. Let all consumption choices be continuous.

I. Short Problems - Explain! No credit will be given without a justification of your answer. (8 pts each)

1. What is a luxury good? Can a good be a luxury good when the consumer's preferences are homothetic? Why or why not? How many goods can possibly be luxury goods in a 3-goods economy? Explain precisely.

2. 'When a good is inferior, the demand for the good increases when its price increases.' Is this statement right or wrong? Explain as precisely as you can.

3. Stan and Ollie's preferences for slapstick videos are given by the inverse demand functions $q_S = 100 - p$ and $q_O = 30 - p/2$, respectively. Graph and compute their aggregate (inverse) demand function $P^D(Q)$. Then, find the market equilibrium (p^*, Q^*) for the (inverse) market supply function $P^S(Q) = 20 + Q/3$.

4. Tom (T) and Jerry (J) have identical incomes m. Their preferences can be described by the utility functions $U_T = \min\{x_1, x_2\}$, and $U_J = x_1 x_2$, respectively. (a) Do T and J consume an identical amount of good 1, or different amounts? Explain! (b) Suppose both of their incomes double. By how much does consumption of good 1 change for Tom, and by how much for Jerry? (c) Suppose good 1 becomes more expensive. In which direction does the consumption of *good 2* (!) change for Tom, and in which direction for Jerry? Justify all your answers.

Bonus question (8 points) The government thinks about imposing a sales tax on good 1, or instead, an income tax that yields the same tax revenue. Do consumers prefer one of these taxes over the other? Use a diagram to explain *precisely* why or why not.

II. Long Problem (32 points) (Explain your answers! Label all graphs!)

Tom is a rational guy, who consumes two goods he only calls 'good 1' and 'good 2'. Specifically, his preferences over these goods are described as

$$U = 12x_1 - \frac{1}{8}x_1^2 + x_2.$$

Let $p_1 = 3$ and $p_2 = 1$.

a) Which consumption bundles (x_1^*, x_2^*) will Tom choose if $p_1 = 3$ and his income is (i) $m = 80$, or (ii) $m = 150$. Graph your results (label everything), and briefly explain your findings.

b) Find Tom's demand functions $x_1(m, p_1, p_2 = 1)$ and $x_2(m, p_1, p_2 = 1)$ for *both goods*. Then, graph his income offer curve, and both Engel curves (Label everything, and provide slopes) for $p_1 = 3$. Explain briefly.

c) Suppose that $m = 80$ and the price for good 1 falls to $p_1 = 2$ dollars. Compute and graph the substitution and the income effect for good 1. Label everything, and explain what you are doing (Note: please use the procedure learned in class, which includes computing m').

d) (Disregard part c) Assume now $m = 150$. By how much does Tom's gross consumer surplus from good 1, CS_{gross}, change when p_1 increases from 3 to 10? By how much does his net consumer surplus, CS_{net}, change? Graph and compute your results. Without further computations, explain *briefly but precisely* by how much has his utility has changed.

e) Again, let $m = 150$. Tom's uncle Walter offers him the choice between two birthday presents: A cash gift of g dollars, or any amount of good 1 that Tom wishes for free. What is the minimum amount of g that lets Tom choose the cash gift? Explain how you find your solution.