Introductory Microeconomics
Homework 2: Consumer Theory, Demand, and Elasticity

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1. T/F. An increase in income shifts the demand curve to the right.
2. T/F. An increase in the price of the good shifts its demand curve to the left.
3. T/F. Income effect may be positive or negative depending on the good.
4. T/F. Marginal utility typically increases as you consume more.
5. Consider the usual budget constraint $p_1q_1 + p_2q_2 = m$. Plot it for $p_1 = 2$, $p_2 = 2$, and $m = 12$ and show what happens if:
   (a) The price of good 1 increases to $p_1 = 4$.
   (b) Income increases to $m = 16$.
   (c) Both prices increase to $p_1 = 4$ and $p_2 = 4$.
   (d) Both prices increase to $p_1 = 4$, $p_2 = 4$, and income also increases to $m = 24$.
6. There are 24 hours in a day. Let c be consumption and h hours of leisure. The budget constraint is:

$$pc + wh = 24w + n$$

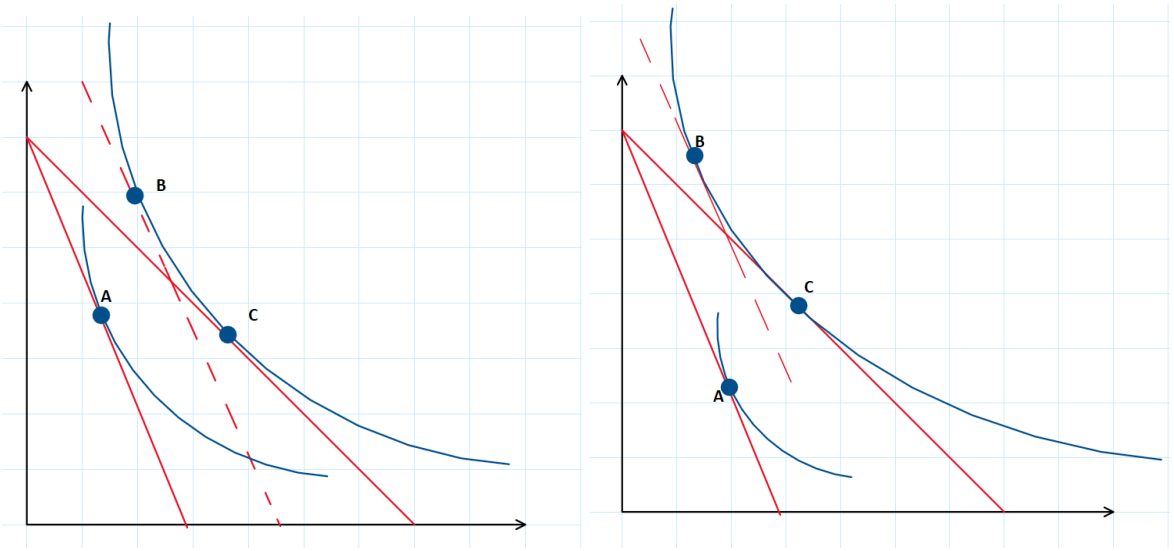
   Where p is the price of the consumption good, w the hourly wage, and n the non-labor income.
   (a) Why is w the price of leisure? Hint: Remember the concept of opportunity cost.
   (b) For $n = 0$. Plot the budget constraint in these two situations $(p, w) = (1, 1)$ and $(p, w) = (1, 2)$. Put h in the horizontal axis and c in the vertical axis.
   (c) For $n = 10$, repeat the previous item. Careful: Your budget constraint will have a kink since leisure cannot exceed 24 hours.
   (d) In both (b) and (c), how much can you consume if you choose to enjoy 16 hours of leisure? Label those points in your plots. Draw indifference curves as if those points were the optimal choice.
7. A consumer buys apples (q_1) and oranges (q_2). Their prices are $p_1 = 2$ and $p_2 = 1$ and he has an income of $m = 11$. His utility is presented below. Using the marginal utility per dollar rule, calculate the optimal bundle and the maximum total utility. You may assume TU $= u(q_1)+u(q_2)$.

q_1	0	1	2	3	4	5
$u(q_1)$	0	32	52	67	77	85
q_2	0	1	2	3	4	5
$u(q_2)$	0	15	25	30	30	28

8. The following graphs present an increase in p_1 in a normal and an inferior good.

   (a) Identify which one is the normal good and which one the inferior.

   (b) In the x-axis identify the income and substitution effects in both graphs.



9. Suppose the individual demand is given by $q(p) = 10 - p$.

   (a) Calculate the elasticity of demand in these three scenarios: 1) Between $p = 2$ and $p = 4$, 2) between $p = 4$ and $p = 6$, and 3) between $p = 6$ and $p = 8$.

   (b) For $p = 3$, $p = 5$, and $p = 7$ classify the demand in elastic, inelastic or neither using your previous answer.

   (c) For $p = 3$, $p = 5$, and $p = 7$ calculate the total revenue of the market defined as $\text{TR} = p \cdot q(p)$. Where is the total revenue the maximum? Interpret.

10. Suppose the individual demand is given by $q(p) = 12/p$. Calculate the elasticity of demand in these two scenarios: 1) Between $p = 1$ and $p = 2$ and 2) between $p = 3$ and $p = 4$. This demand is called iso-elastic demand. Why?