

Homework #1

Note: Homework markings are a check mark (100%), check with squiggle (75%), squiggle (50%), squiggle with X (25%) or X (0%)—and are graded on a 10-point scale.

- 1a.) Q_{Dx} is a function of $(P_X, Y, P_{\text{other goods...}})$. Let $Q_{Dx} = 40 - 5*P_X + 3*Y - 4*P_A + 2*P_B$.
With $P_X = 4$, $Y = 10$, $P_A = 5$, $P_B = 10$, calculate Q_{Dx} .
 - b.) Holding Y (income), P_A , and P_B constant, choose two other values for P_X and calculate Q_{Dx} each time. Plot those two points along with the original point as a demand curve. (Put Q on the horizontal axis and P_X on the vertical axis.)
 - c.) Describe the exact numerical relationship between the change in P_X and the subsequent change in Q_{Dx} : as P_X increases by \$1, Q_{Dx} increases/decreases by ____ units. Repeat for P_B and its impact on Q_{Dx} . Now look at your two answers and the original equation: what's the connection? Finally, merely looking at the equation, what is the impact of a \$1 increase in P_A and Y on Q_{Dx} ?
 - d.) Is good A a complement or substitute for good X? Why? What about good B?
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- 2a.) Demand curves illustrate the relation between P_X and Q_{Dx} , thus implicitly holding P_A , P_B , and Y constant. As an example, let $Q_{Dx} = 100 - 8*P_X + 2*Y + 5*P_A - 10*P_B$ with $P_X = 5$, $Y = 20$, $P_A = 2$, and $P_B = 7$. Pick two other values for P_X , calculate the subsequent Q_{Dx} , and draw a demand curve.
 - b.) Returning to the original values in this question, allow Y to take a different value. Calculate Q_{Dx} and (remembering that P_X is unchanged) draw that point on your graph from 2a. Then, using the values for P_X you chose in part a of this question (and the new value for Y), calculate the subsequent values for Q_{Dx} and draw the new D.
 - c.) Establish a rule for what causes a movement along D and what requires a shift in D.
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- 3a.) "I see that people are buying more." Draw the 2 different graphs—each with D&S, one shifting D and the other shifting S—which illustrate/cause this sentence. What are the important differences in the two graphs? Name one thing that would cause the change in each graph.
 - b.) "I see that prices are higher." Draw the 2 different graphs—each with D&S, one shifting D and the other shifting S—which illustrate/cause this sentence. What are the important differences in the two graphs? Name one thing that would cause the change in each graph.
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- 4a.) Let $Q_{Dx} = 20 - 2*P_X$ and $Q_{Sx} = 10 + 3*P_X$. What is the mathematical relation between Q_{Dx} and Q_{Sx} at equilibrium? Given that, calculate equilibrium price and quantity.
 - b.) Calculate Q_{Dx} and Q_{Sx} for a price greater than equilibrium. Is this a shortage or a surplus? Of how many units?
 - c.) Let supply "shift" to $Q_{Sx}' = 5 + 3*P_X$. Calculate equilibrium price & quantity. What exactly would have happened if price had remained the same as your answer to pt. a?
 - d.) Draw all of this on one graph (carefully).