

## **Homework #1:** (due Thursday)

**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  $Q_{Dx}$ . For example, as  $P_X$  increases by \$1,  $Q_{Dx}$  increases/decreases by \_\_\_\_ units.
  - d.) Look at the original equation and your answer to 1c. What's going on? Repeat 1c. as necessary—for  $P_A$ ,  $P_B$ , and  $Y$  (one at a time) & their impact on  $Q_{Dx}$ —until you see it!
  - e.) 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  $D$  on the same graph.
  - 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.