Economics 102
Fall 2017
Homework #1
Due 9/26/2017

Directions: The homework will be collected in a box **before** the lecture. Please place your name, TA name and section number on top of the homework (legibly). Make sure you write your name as it appears on your ID so that you can receive the correct grade. Please remember the section number for the section **you are registered,** because you will need that number when you submit exams and homework. Late homework will not be accepted so make plans ahead of time. **Please show your work.** Good luck!

Please remember to
  • Staple your homework before submitting it.
  • Do work that is at a professional level: you are creating your "brand" when you submit this homework!
  • Do not submit messy, illegible, sloppy work.
  • Show your work to get full credit.

1. You are given two pairs of coordinates that have a linear relationship. The two pairs of coordinates are (x, y) = (30, 70) and (20, 50).

a. Find the expression of the line (Line 1) that goes through these two points in y-intercept form.

b. In this linear relationship, if the level of x increases by 13, what is the resulting change in y?

c. There is another linear relationship represented by the following expression:

(Line 2): y = 90 – 4x

Find the (x, y) solution that represents the intersection of these two lines.

d. Now Line 1 is shifted in such way that for every x value, the y value is 40 units smaller, at the same time Line 2 is shifted in such way that for every y value, the x value is 10 units larger. Represent these shifts in a clearly labelled graph measuring X along the horizontal axis and y along the vertical axis. In your graph represent both the initial lines (Line 1 and Line 2) and the new lines (Line 1' and Line 2'). Does the new intersection have a larger x value compared to the original x value calculated in part (c)? At the new intersection of these two new lines, is the new y value larger or smaller than the initial y value?

2. The price of money is called the interest rate. Suppose that when the interest rate is 3%, the supply of loans is $15,000 and when the interest rate is 7% the supply of loans is $20,000. Assume the relationship between the quantity of loans supplied (L) and the interest rate (r) is linear.

a. Write an equation for this relationship in L-intercept form.

b. What would the equation for this relationship be if it was written in r-intercept form?

3. The closing price of Amazon (AMZN) on Sept. 5, 2017 was $965 and that on Sept. 7, 2017 the closing price was $979. On Sept. 8, 2017, the closing price of Amazon (AMZN) was $965.

a. What was the percentage change in the closing price of Amazon's (AMZN) stock price between Sept. 5, 2017 and Sept. 7, 2017?

b. What was the percentage change in the closing price of Amazon's (AMZN) stock price between Sept. 5, 2017 and Sept. 8, 2017?

c. What was the percentage change in the closing price of Amazon's (AMZN) stock price between Sept. 7, 2017 and Sept. 8, 2017?

d. In both part (a) and (c) you are calculating percentage changes and the relevant numbers in both examples are $965 and $979, do you get the same answers? Explain your answer.

4. Steven, Yunhan, and Lois produce bagels (B) and cupcakes (C) for the Economics department. They all have linear production possibility frontiers. Steven knows that he can produce (C, B) = (10, 20) and (40, 15) or any other combination of these two goods that lies on the line containing these two points. Yunhan knows that the maximum number of bagels he can produce is 30 and the maximum number of cupcakes he can produce is 100. Lois knows that she must give up 4 cupcakes for every bagel she produces. Lois is currently producing 25 bagels and 20 cupcakes.

a. Represent the production possibility frontiers for Steven, Yunhan and Lois in three clearly labeled graphs. Please measure cupcakes (C) on the horizontal axis and bagels (B) on the vertical axis.

b. Write out the B-intercept form expressions of the individual PPFs for Steven, Yunhan and Lois.

c. Who has the absolute advantage in producing bagels (B) and cupcakes (C)?

d. Who has the comparative advantage in producing bagels (B) and cupcakes (C)?

e. Construct Steven, Yunhan, and Lois's joint PPF in a clearly labeled graph. Please measure cupcakes (C) on the horizontal axis and bagels (B) on the vertical axis. Identify the y-intercept, the x-intercept, and the coordinates of any "kink points" in your graph.

f. Write out the expression (that is, the equation) and the corresponding range for each segment of the joint PPF.

g. Use the number line approach to illustrate the acceptable range of trading prices for one bagel (B) in terms of cupcakes (C) for Steven, Yunhan and Lois.