ECON3113
Microeconomic Theory I

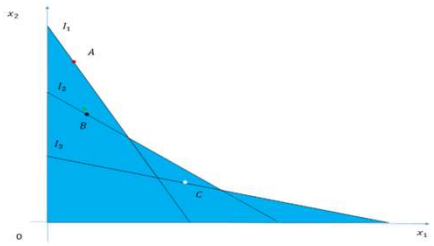
Online Assignment #3 Solution

Online assignment #3

Question 1 2 pts

Assume that consumer preferences are transitive. In the figure below, we have the following data:

1. At budget set I_1, the consumer chooses bundle A
2. At budget set I_2, the consumer chooses bundle B
3. At budget set I_3, consumer chooses bundle C



Which of the following is/are true?

A: A is directly revealed preferred to B

B: B is directly revealed preferred to C

C: A is directly revealed preferred to C

D: A is indirectly revealed preferred to C

E: The indifference curve for this consumer passing through A must pass above the blue shaded region

- A and B
- A, B and C
- A, B and E
- A, B, D and E
- All are correct

- A: True. A is chosen when B is affordable, so A is directly revealed preferred to B
- B:. True. B is chosen when C is affordable, so B is directly revealed preferred to C
- C: False. C is not affordable when A is chosen, and so A is not directly revealed preferred to C
- D: True. A is directly revealed preferred to B which is directly revealed preferred to C. Therefore, A is indirectly revealed preferred to C.
- E: True. A is revealed preferred to the shaded region (under our assumptions) and so an indifference curve through A must pass above the shaded region.
- **Therefore A, B, D and E are correct**

Online assignment #3

Question 2 2 pts

Write your answer to questions (i)-(iv) on a piece of paper, scan and upload it to Canvas.

Suppose that Person 1 and Person 2 rank their preferences for X and Y. The alternative ranked in first place scores 2 points and the alternative ranked in second place scores 1 point.

	Person 1	Person 2
1st place	X	Y
2nd place	Y	X

Question (i): what are the aggregate ranking scores for X and Y?

Now suppose that a third possibility, Z, is introduced, and that Person 1 and Person 2 rank their preferences as in the table below. Now, the first ranked alternative scores 3 points, the second ranked 2 points and the third ranked scores 1 point.

	Person 1	Person 2
1st place	X	Y
2nd place	Y	Z
3rd place	Z	X

Question (ii): what are the aggregate ranking scores for X and Y in this case?

Question (iii): have Person 1 and Person 2's preferences for X relative to Y changed?

Question (iv): Suppose that a Social Welfare Function is formulated based on the aggregate ranking scores. Which requirement of a SWF would be violated with the introduction of Z?

(i) X: 3, Y:3

(ii) X:4, Y:5

(iii) No. Relative preferences between X and Y remain the same, even though the positions of X and Y in the rankings change with the introduction of Z

(iv) IIA. The introduction of Z has changed the ranking scores and hence the SWF output without changing the relative ranking of X and Y. This is a violation of IIA

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Question 3 2 pts

Write your answer to this question on a piece of paper, scan and upload it to Canvas.

Suppose we have the following information about a Social Welfare Function (SWF) and the individual choices that generate it. Suppose also that this SWF is not a Dictatorship:

SWF: $A \succ^* D \succ^* B \succ^* C$

Individual preferences:

Individual 1: $A \succ B \succ C \succ D$

Individual 2: $B \succ C \succ A \succ D$

Individual 3: $C \succ B \succ A \succ D$

Individual 4: $A \succ C \succ B \succ D$

Without doing any calculations, can this SWF satisfy all of Universal Domain, Unanimity and Independence of Irrelevant Alternatives? Explain your answer in one sentence.

- No. This is an application of Arrow's Impossibility Theorem. We are told that the SWF is not a dictatorship, and that there are four alternatives. Therefore, under the Impossibility Theorem, there is no SWF (except Dictatorship) that can satisfy UD, Unanimity and IIA.

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Question 4 2 pts

The table below shows the cost of bundles X, Y and Z at prices P1, P2 and P3. In each case, the bundle in red is the most preferred bundle chosen at each set of prices.

Prices	Cost of X	Cost of Y	Cost of Z
P1 = (1,2)	5	4	6
P2 = (2,1)	4	5	6
P3 = (1,1)	3	3	4

Which of the following is/are true?

A: At prices P1, bundle X is directly revealed preferred to bundle Y

B: At prices P2, bundle Y is directly revealed preferred to bundle X

C: At prices P3, bundle Z is directly revealed preferred to bundles X and Y

D: These choices satisfy the Weak Axiom of Revealed Preference

- A and C
- B and C
- A, B and C
- All are true
- None are true

- A: True. At prices P1, X is chosen when Y is affordable, therefore X is directly revealed preferred to Y
- B: True. At prices P2, Y is chosen when X is affordable, therefore Y is directly revealed preferred to X
- C: True: At prices P3, Z is chosen when both X and Y are affordable. Therefore Z is directly revealed preferred to X and Y.
- D: False. We have that at P1 X is chosen when Y is affordable and at P2 Y is chosen when X is affordable. This is a violation of WARP
- **Therefore A, B and C are true**

Online assignment #3

Question 5 2 pts

Revealed Preference Theory examines what we can say about consumers' utility function and preferences given observed behaviours . In particular, the Theory asks whether we can tell if a consumer is utility maximising by observing the consumer's choices . A key conclusion of the Theory is that a consumer is utility maximising if and only if the consumer's choices satisfy the Strong Axiom of Revealed Preference .

Answer 1:

Correct! utility function and preferences

Answer 2:

Correct! observed behaviours

Answer 3:

Correct! utility maximising

Answer 4:

Correct! observing the consumer's choices

Answer 5:

Correct! utility maximising

Answer 6:

Correct! the Strong Axiom of Revealed Preference

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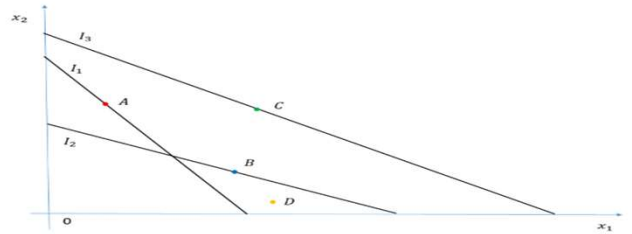
Question 6 2 pts

Assume that consumer preferences are transitive. In the figure below, we have the following data:

1. At budget set I_1, the consumer chooses bundle A
2. At budget set I_2, the consumer chooses bundle B
3. At budget set I_3, consumer chooses bundle C



Which of the following is/are true?

A: A is directly revealed preferred to B

B: A is indirectly revealed preferred to D

C: C is directly revealed preferred to A

- A and B only
- B and C only
- A and C only
- A, B and C
- C only

- A: False. When A is chosen, B is not affordable
- B: False. Since A is not directly revealed preferred to B, A cannot be indirectly revealed preferred to D
- C: True. C is chosen when A is available, therefore C is directly revealed preferred to A
- **Therefore, only C is correct.**