

Homework 1 - EconS 501 (Wednesday, September 1st 2021)

1. Consider that your preference relation over three bundles, x_1 , x_2 , and x_3 , satisfies

$$x_1 \succ x_2$$

$$x_2 \succ x_3$$

$$x_3 \succ x_1$$

- (a) Show that you can be wiped out of your wealth w , where $w > 0$. (Hint: Begin with x_3 .)
- (b) Consider an individual with a preference relation that violates rationality because his preferences are incomplete or intransitive. Discuss.
2. Consider the following preference relation defined in $X = \mathbb{R}_+^2$. A bundle (x_1, x_2) is weakly preferred to another bundle (y_1, y_2) , i.e., $(x_1, x_2) \succeq (y_1, y_2)$, if and only if

$$\max \{x_1 + 2x_2, 2x_1 + x_2\} \geq \min \{y_1 + 2y_2, 2y_1 + y_2\}$$

- (a) For any given bundle (y_1, y_2) , draw the upper contour set, the lower contour set, and the indifference set of this preference relation (take point $(3, 1)$). Interpret.
- (b) Check if this preference relation satisfies: (i) completeness and (ii) transitivity.
3. Explain transitivity in preference relations. Provide an example (different to the examples discussed in class) where this property is not satisfied and discuss the consequences of intransitive preferences.
4. Explain monotonicity and strong monotonicity in preference relations, and compare them. Provide an example where a bundle x is (strictly) preferred to bundle y when preferences satisfy strong monotonicity, but x is not necessarily preferred to y under monotonicity.