

## Microeconomics

Masters in Economics and Masters in Monetary and Financial Economics

### Midterm Test

Maximum duration: 1h30

5<sup>th</sup> of November of 2015

#### Question 1

(4 marks) Show that if preferences  $\succeq$  are represented by a utility function, then  $\succeq$  satisfies completeness and reflexivity.

#### Question 2

A consumer has preferences over goods 1 and 2 represented by the utility function:

$$u(x_1, x_2) = \min\{2x_1, x_2\}.$$

Let  $p_1$  be the price of good 1, let  $p_2$  be the price of good 2, and let income be equal to  $y$ .

1. (3 marks) Derive the Marshallian demands for goods 1 and 2.
2. (1.5 marks) Derive the indirect utility function.
3. (1 mark) Use the Slutsky equation to decompose the effect of an own-price change on the demand for good 1 into income and substitution effects.
4. (1.5 marks) Determine the expenditure function.
5. (2 marks) Show that the expenditure function is strictly increasing in  $y$ , increasing in prices, homogeneous of degree 1 in prices, and concave in prices.
6. (1 mark) Using Shephard's lemma, derive the compensated (or Hicksian) demand functions.

#### Question 3

(2 marks) Explain the Weak Axiom of Revealed Preference.

#### Question 4

Consider the quadratic vNM-utility function  $u(w) = a + bw + cw^2$ , where  $w$  represents wealth.

1. (1 mark) What restrictions do the parameters  $a$ ,  $b$  and  $c$  have to satisfy for this utility function to feature risk-aversion?
2. (1 mark) For what range of  $w$  is the given function a reasonable utility function?
3. (2 marks) Compute the coefficient of absolute risk-aversion and show that this function cannot exhibit diminishing absolute risk aversion if the restrictions in 1. are satisfied.