Econ 8100 - Midterm

warm-up.

A consumer has a preference relation $\succsim$ *over three bundles of two goods:*

$$a = (2,0)\,, b = (0,2)\,, c = (1,1)$$

$\succsim$ *has the following properties:*

For all $x, y, z \in \{a, b, c\}$*:*

- $x \succsim x$
- $x \succsim y$ or $y \succsim x$
- $x \succsim y$ and $y \succsim z$ implies $x \succsim z$.
- $x \succsim y$ and $y \succsim x$ implies $x = y$.

A. List all the possible relations $\succsim$ meeting these conditions.

B. Of these relations, which are not convex?

pieces.

A consumer has income $y = 1$*. Price of good 2 is* $p_2 = 2$*. The consumer's utility function is:*

$$u(x_1, x_2) = \begin{cases} x_1 + x_2 & x_1 + x_2 < 1 \\ x_1 + 4x_2 & x_1 + x_2 \geq 1 \end{cases}$$

A. Prove this consumer does not have continuous preferences.

B. Sketch some indifference curves for this consumer. Make sure to include a few above and below the line $x_1 + x_2 = 1$.

C. What is the consumer's Marshaillian demand when $2 > p_1 > 1$?

D. What is the consumer's Marshaillian demand when $p_1 < 1$?

E. What is unusual about this demand?

F. Is x_1 normal or inferior when $p_1 < 1$?

staples.

A consumer has utility function:

$$u(x_1, x_2) = \left(x_1^{\frac{1}{2}} + x_2^{\frac{1}{2}}\right)^2$$

A. Show this utility function is quasi-concave.

B. Write down the Lagrangian for the consumer's utility maximization problem.

C. What are this consumer's Marshallian demands?

D. What is the price elasticity of demand for x_1 at $p_1 = 1$ and $p_2 = 1$?

E. What are this consumer's Hicksian demands? (*Tip: it may be easier to do cost minimization here, rather then leveraging duality.*)

F. Show the consumer's expenditure function is linear in utility.

G. What is the sign of the second derivative of the expenditure function with respect to p_1?