EXERCISES CHAPTER 10

Exercise 1. One hundred consumers have individual demand for some good x of $x = 10 - p$.

(a) What is the individual price elasticity of demand for this good? (This will be a function of p).
(b) When $p = 9$ what is individual price elasticity of demand?
(c) When $p = 9$ what happens to individual demand when price increases by 1%?
(d) What is the market demand for this good?
(e) What is the market price elasticity of demand for this good? (This will be a function of p).

Exercise 2. Ten consumers each have Cobb Douglass utility functions $U(x_1, x_2) = x_1 x_2$ they each have income $m_i = 100$

(a) Using the tangency condition, what is each person's demand for x_1?
(b) What is each individual's income elasticity of demand for x_1?
(c) What happens to an individual's demand when their income goes up by 1%?
(d) What is each individual's price elasticity of demand for x_1?
(e) What happens to an individual's demand when price goes up by 1%? At the individual level, is this good elastic, inelastic, or unit-elastic?
(f) What is X_1, the market demand for x_1
(g) What is the market price elasticity of demand?
(h) What happens to market demand when price goes up by 1%? At the individual level, is this good elastic, inelastic, or unit-elastic?

Exercise 3. An individual has demand $x_1 = \frac{m}{p_1+p_2}$ for a good.

(a) What is η, their income elasticity of demand for x_1?
(b) What is to an individual's demand when their income goes up by 1%?
(c) What is $\epsilon_{1,1}$, their price elasticity of demand for x_1?
(d) When $p_1 = 1$ and $p_2 = 1$, what is the price elasticity of demand? What happens to their demand when price goes up by 1%? Is this good elastic, inelastic, or unit-elastic?
(e) What is $\epsilon_{1,2}$, their *cross* price elasticity of demand for x_1 with respect to price p_2?
(f) When $p_1 = 1$ and $p_2 = 1$, what is the cross price elasticity of demand? What happens to their demand for good 1 when price of good 2 goes up by 1%?

Exercise 4. Interpret the following elasticities in words:

(a) $\epsilon_{1,1} = -10$
(b) $\epsilon_{1,1} = -0.1$
(c) $\epsilon_{1,2} = 1$
(d) $\epsilon_{2,1} = -1$

(e) $\eta = 1$
(f) $\eta = -\frac{1}{2}$

Exercise 5. Find the price elasticity demand for the following demand functions.

(a) $x = \frac{m}{p}$
(b) $x = \frac{m-10}{p}$
(c) $x = \frac{m}{p^2}$

Exercise 6. Find the income elasticity demand for the following demand functions.

(a) $x = \frac{m}{p}$
(b) $x = \frac{m-10}{p}$
(c) $x = \frac{m}{p^2}$