

ECON4020 B
Advanced Microeconomic Theory

Problem Set Two

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Do the following exercises in *Varian*, 3rd edition

Chapter 7: 7.2, 7.4.

Chapter 8: 8.2, 8.6, 8.7, 8.8, 8.12.

Additional Exercises

1. The indirect utility function of a consumer is given by

$$v(p_1, p_2, m) = \frac{Am}{p_1^a p_2^{1-a}},$$

where $a \in (0, 1)$ and $A > 0$.

- Use the Roy's identity to find the Marshallian demand function for goods 1 and 2.
- Find the expenditure function.
- Use the Shephard's lemma to find the Hicksian demand function for goods 1 and 2.
- Verify the Slutsky equation for $\partial x_1 / \partial p_1$.

2. From Exercise 8.6, we find the following indirect utility function and the expenditure function:

$$v(p_1, p_2, m) = \left[\frac{m}{5}\right]^{5/6} \left[\frac{3}{p_1}\right]^{1/2} \left[\frac{2}{p_2}\right]^{1/3};$$
$$e(p_1, p_2, u) = 5u^{6/5} \left[\frac{p_1}{3}\right]^{3/5} \left[\frac{p_2}{2}\right]^{2/5}.$$

- Verify that the indirect utility function is increasing m and decreasing in p_i .
- Verify that the indirect utility function is homogeneous of degree 0 in (p_1, p_2, m) .
- Verify that the expenditure function is increasing in u and p_i .
- Verify that the expenditure function is concave in (p_1, p_2) .
- Find the money metric utility function and the money metric indirect utility function.