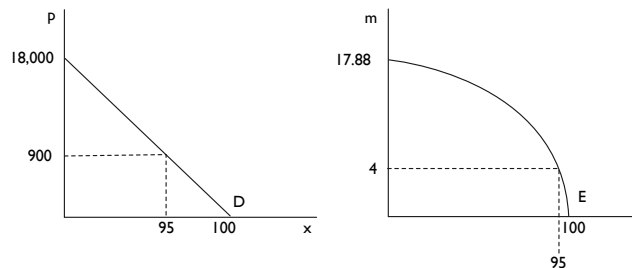


ECON 301, Professor Hogendorn

Problem Set 3 Answers

1. *Apartments_a.*

- (a) The key here is that the Engel curve is nonlinear and downward sloping.



- (b) The Engel curve slopes down, so apartments are inferior.
- (c) Previously, spending on apartments was $\$900 \cdot 95 = \$85,500$. The new amount needed is $\$800 \cdot 95 = \$76,000$, for a difference of $\$9500$. So a lump sum tax on all consumers of $\$9500$ would leave them just able to afford the old point.

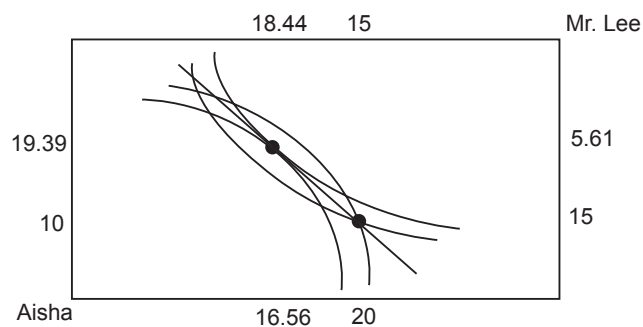
2. *AishaMrLee_a.*

- (a)

$$MRS_A = -\frac{\frac{\partial u}{\partial G}}{\frac{\partial u}{\partial V}} = -\frac{.7G^{-.3}V^{.3}}{.3G^{.7}V^{-.7}} = -\frac{7V}{3G} = -\frac{7 \cdot 10}{3 \cdot 20} = -\frac{7}{6}$$

$$MRS_L = -\frac{\frac{\partial u}{\partial G}}{\frac{\partial u}{\partial V}} = -\frac{.9G^{-.1}V^{.1}}{.1G^{.9}V^{-.9}} = -9\frac{V}{G} = -9\frac{15}{15} = -9$$

(b) and (d)



(c) We have seen before that the demand functions for a Cobb-Douglas will produce the following results:

$$G_A = 0.7 \frac{m}{p_G} = 0.7 \frac{20 + 10p_V}{1}$$

$$G_L = 0.9 \frac{m}{p_G} = 0.9 \frac{15 + 15p_V}{1}$$

Thus, the market equilibrium condition is:

$$G_A + G_L = 35$$

$$27.5 + 20.5p_V = 35$$

Solving this gives

$$20.5p_V = 7.5 \Rightarrow p_V = 0.366$$

This means that $G_A = 16.56$, $G_L = 18.44$, $V_A = 19.39$, $V_L = 5.61$.