501A 11/30

prop 3.6.1 $h_l(p, \bar{v}) = \dfrac{\partial e(p, \bar{v})}{\partial p_l}$

prop 3.6.2 (i) $D_p h(p, \bar{v}) = D_p^2 e(p, \bar{v})$

(ii) $D_p h(p, \bar{v})$ is n.s.d

(iii) $D_p h(p, \bar{v})$ is symmetric

(iv) $D_p h(p, \bar{v})\, p = 0$

prop 3.6.3 $\dfrac{\partial h_k(p, \bar{v})}{\partial p_k} = \dfrac{\partial x_k(p, w)}{\partial p_k} + \dfrac{\partial x_k(p, w)}{\partial w} x_k(p, w)$

3.6.4 Roy's identity : $x_l(p, w) = -\dfrac{\partial v(p, w)/\partial p_l}{\partial v(p, w)/\partial w}$

$u(x_1, x_2) = x_1^{\alpha} x_2^{1-\alpha}$, $\alpha \in (0, 1)$

UMP : $x_1 = \dfrac{\alpha w}{p_1}$ $x_2 = \dfrac{(1-\alpha) w}{p_2}$

EMP : $h_1 = \left(\dfrac{1-\alpha}{\alpha} \cdot \dfrac{p_1}{p_2}\right)^{1-\alpha} u$ $h_2 = \left(\dfrac{1-\alpha}{\alpha} \cdot \dfrac{p_1}{p_2}\right)^{\alpha} u \Rightarrow e(p, u) = \dfrac{p_1^{\alpha} p_2^{1-\alpha} u}{\alpha^{\alpha} (1-\alpha)^{1-\alpha}}$

$$D_p h(p, u) = \begin{pmatrix} \dfrac{p_1^{\alpha-2} p_2^{1-\alpha} u (\alpha-1)}{\alpha^{\alpha-1} (1-\alpha)^{1-\alpha}} & \dfrac{p_1^{\alpha-1} p_2^{-\alpha} u}{\alpha^{\alpha-1} (1-\alpha)^{-\alpha}} \\ \dfrac{p_1^{\alpha-1} p_2^{-\alpha} u}{\alpha^{\alpha-1} (1-\alpha)^{-\alpha}} & \dfrac{p_1^{\alpha} (-\alpha) p_2^{\alpha-1} u}{\alpha^{\alpha} (1-\alpha)^{-\alpha}} \end{pmatrix}$$

$\Downarrow$

Check them by myself.

#20.4 $w^0 = 150$ $P_1 = P_2 = 1$

$\hat{w} = 150$ $\hat{P_1} = 1$ $\hat{P_2} = 2$

Wouldn't mind moving if when he moved he gets a raise of B.

$(p^0, w^0) \sim^* (\hat{p}, w^0 + B)$ (1)

Having to move is as bad as a cut of salary in the pay of A

$(p^0, w^0 - A) \sim^* (\hat{p}, \hat{w})$ (2)

$u = \min\{x_1, x_2\} \Rightarrow x_1 = x_2 = \dfrac{w}{P_1+P_2}$, $v(p,w) = \dfrac{w}{P_1+P_2}$

(1) $\dfrac{w^0}{P_1+P_2} = \dfrac{w^0+B}{\hat{P_1}+\hat{P_2}}$: $B = 75$

(2) $\dfrac{w^0-A}{P_1+P_2} = \dfrac{w^0}{\hat{P_1}+\hat{P_2}}$: $A = 50$

Mid term #2 (Hugo's solution)

. good 1 & good 2 , Ann . Bob

1. Satisfy Walras' law.
2. $P_1 = P_2$, demand all of the bundle on the budget frontier

(a) $P_1 \neq P_2$. Ann chooses expensive good] behavior is consistent?
(b) $P_1 \neq P_2$. Bob chooses cheaper good

sol) (a) Suppose Ann is maximizing over some utility function

then her choice behavior should satisfy WA

$\succsim_{Ann}$ transitive $\Rightarrow$ $C_x(\cdot)$ satisfies WA.

Consider $B(p, w)$ with $P_1 = P_2$
$B'(p, w)$ with $P_1 < P_2$

$x_1 \in C(B(P_1 = P_2, w))$

$x_2 \in C(B'(P_1 < P_2, w))$

Both $x_1, x_2 \in B(p, w)$ and $B'(p, w)$

Therefore, $x_1 \in C(B'(P_1 < P_2, w))$ By WA,

but it failed WA.