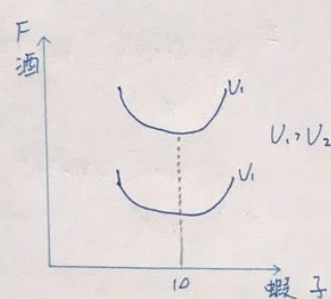
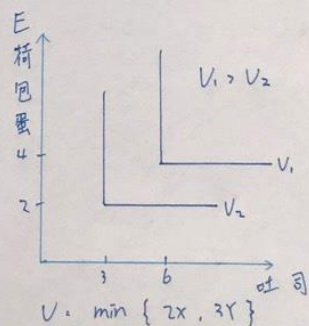
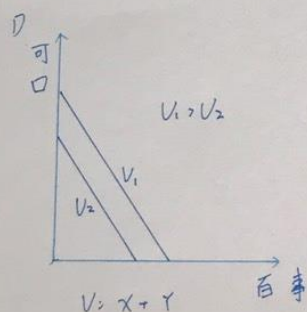
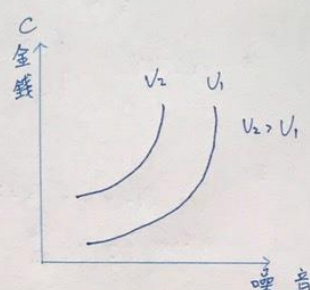
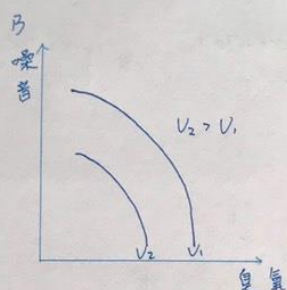
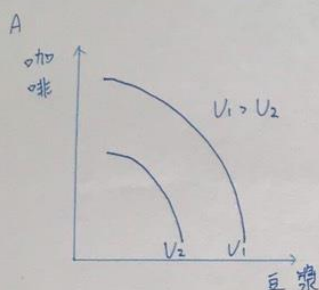


效用函數	$U_A = X^{0.5} Y^2$	$U_B = X^2 + Y^2$	$U_C = \ln X + Y$	$U_D = 2X + Y$	$U_E = XY^4$
MU _X 函數	$0.5 X^{-0.5} Y^2$	$2X$	$\frac{1}{X}$	2	Y^4
MU _Y 函數	$2 X^{0.5} Y$	$2Y$	1	1	$4XY^3$
MU _X 遞減?	遞減	遞增	遞減	固定	固定
MU _Y 遞減?	遞增	遞增	固定	固定	遞增
MRS _{XY} 函數	$0.25 Y/X$	X/Y	$\frac{1}{X}$	2	$0.5 Y/X$
MRS _{XY} 遞減?	遞減	遞增	遞減	固定	遞減
無異曲線 凸向原點?	凸向原點	凹向原點	凸向原點	不凸不凹	凸向原點

二.



三.

(A) $10X + 10Y = 500$

(B) -1

(C) $11X + 10Y = 500$

(D) $8X + 10Y = 500$

(E) $10X + 10Y = 400$

(F) $\begin{cases} 10(X-10) + 10Y = 500, & X \geq 10 \\ 10Y = 500, & X < 10 \end{cases}$

(G) $\begin{cases} 10X + 10Y = 500, & X \leq 30 \\ 300 + 12(X-30) + 10Y = 500, & X > 30 \end{cases}$

(H) $\begin{cases} 10X + 10Y = 500, & X \leq 30 \\ 300 + 5(X-30) + 10Y = 500, & X > 30 \end{cases}$

$$(A) 60X + 200Y = 6200$$

$$(B) \begin{cases} 80(X-5) + 200Y = 6200, & X > 5 \\ 200Y = 6200, & X \leq 5 \end{cases}$$

$$(C) \begin{cases} 80X + 200Y = 6400, & X \leq 50 \\ 200Y = 2400, & 50 < X \leq 55 \\ 80X + 200Y = 6800, & 55 < X \end{cases}$$

五

$$\text{預算限制: } 300 = 10X + 20Y$$

$$I \text{ 偏好: } U: f(X, Y) = X^{\frac{2}{3}} Y^{\frac{1}{3}}$$

$$MRS_{XY} = \frac{\frac{2}{3} X^{-\frac{1}{3}} Y^{\frac{1}{3}}}{\frac{1}{3} X^{\frac{2}{3}} Y^{-\frac{2}{3}}} = \frac{P_X}{P_Y} = \frac{10}{20}$$

$$\Rightarrow X = 4Y \quad \begin{cases} 300 = 10X + 20Y \\ Y = \frac{1}{4}X \end{cases} \text{ 得 } \begin{cases} X = 20 \\ Y = 5 \end{cases}$$

II

$$U: f(X, Y) = X + 3Y$$

$$MRS_{XY} = \frac{1}{3} < \frac{P_X}{P_Y} = \frac{10}{20} = \frac{1}{2}$$

$$\Rightarrow X = 0, Y = 15$$

$$\text{得 } \begin{cases} X = 0 \\ X = 15 \end{cases}$$

III

$$U: f(X, Y) = \min(X, Y)$$

$$Y = X$$

$$\Rightarrow \begin{cases} 300 = 10X + 20Y \\ Y = X \end{cases}$$

$$\text{得 } \begin{cases} X = 10 \\ Y = 10 \end{cases}$$

六

$$\textcircled{1} 400X + 600Y = 12000$$

$$U = X^{\frac{1}{2}} Y^{\frac{1}{2}}$$

$$MRS_{XY} = \frac{P_X}{P_Y} = \frac{400}{600} = \frac{2}{3} = \frac{\frac{1}{2} X^{-\frac{1}{2}} Y^{\frac{1}{2}}}{\frac{1}{2} X^{\frac{1}{2}} Y^{-\frac{1}{2}}} \Rightarrow 2X = 3Y$$

$$\begin{cases} 2X = 3Y \\ 2X + 3Y = 60 \end{cases}$$

$$\text{得 } \begin{cases} X = 15 \\ Y = 10 \end{cases}$$

$$\textcircled{2} \begin{cases} X + Y = 23 \\ X + Y = 23 \\ 3Y = 2X \end{cases} \Rightarrow \begin{cases} X = 13.8 & (\text{英}) \\ Y = 9.2 & (\text{电}) \end{cases}$$