

的消费者选择  
一天最大的享受·如果只  
一个汉堡一定要搭配一杯奶茶

THU	FRI	SAT	SUN

5. (I)  $\text{Max } U = X^{\frac{2}{3}} Y^{\frac{1}{3}}$  s.t.  $300 = 10X + 20Y$

$$MRS_{XY} = \frac{\frac{2}{3} X^{-\frac{1}{3}} Y^{\frac{1}{3}}}{\frac{1}{3} X^{\frac{2}{3}} Y^{-\frac{2}{3}}} = \frac{10}{20} \Rightarrow \frac{2}{X} Y = \frac{10}{20} \Rightarrow Y = \frac{1}{4} X$$

$$10X + 20\left(\frac{1}{4}X\right) = 300 \Rightarrow 15X = 300 \Rightarrow \begin{cases} X = 20 \\ Y = 5 \end{cases}$$

(II)

$\text{Max } U = X + 3Y$  s.t.  $300 = 10X + 20Y$

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

Ans:  $\begin{cases} X = 0 \\ Y = 15 \end{cases}$

(III)

$\text{Max } U = \min(X, Y)$

s.t.  $300 = 10X + 20Y$

最適消費條件:  $Y = X$

$X = Y = 10$

Ans:  $\begin{cases} X = 10 \\ Y = 10 \end{cases}$