

$$5. 300 = 10x + 2y$$

I 若偏好為  $U = f(x, y) = x^{\frac{2}{3}}y^{\frac{1}{3}}$ , 則短期消費決策 =  $\text{Max } U = f(x, y) = x^{\frac{2}{3}}y^{\frac{1}{3}}$   
 Subject to  $300 = 10x + 20y$

$$\text{根據最適條件} = \text{MRS}_{xy} = \frac{\frac{2}{3}x^{-\frac{1}{3}}y^{\frac{1}{3}}}{\frac{1}{3}x^{\frac{2}{3}}y^{-\frac{2}{3}}} = \frac{2y}{x} = \frac{10}{20} = \frac{1}{2}$$

$\rightarrow y = \frac{1}{2}x$ , 代入  $300 = 10x + 20y$ , 得  $x = 20, y = 5$ , 即每週消費 20 杯奶茶及 5 漢堡

II 若偏好為  $U = f(x, y) = x + 3y$ , 則消費決策 =  $\text{Max } U = f(x, y) = x + 3y$   
 Subject to  $300 = 10x + 20y$

$$\text{根據最適條件} = \text{MRS}_{xy} = \frac{1}{3} < \frac{10}{20} = \frac{1}{2}$$

$\therefore x = 0, y = 15$ , 因此每週消費 0 杯奶茶及 15 漢堡

6. ~~the~~

$$(s, t) \Rightarrow x + y = 2 \quad \begin{cases} x + y = 2 \\ 930x + 600y = 12000 \end{cases}$$

$$\text{相減} \quad \begin{cases} 4x + 4y = 92 \\ 4x + 6y = 120 \end{cases}$$

$$-2y = -28$$

$$y = 14$$

$$x = 9$$