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$$\text{Max } U = f(x, y) = x^{\frac{2}{3}} y^{\frac{1}{3}}$$

$$\text{subject to } 300 = 10x + 20y$$

最適消費量 $x = 20 \quad y = 5$

$$\text{Max } U = f(x, y) = x^{\frac{2}{3}} y^{\frac{1}{3}}$$
$$\text{subject to } 300 = 20x + 20y$$

$$\text{MRS}_{xy} = \frac{2y}{x} = \frac{p_x}{p_y} = 1$$

$$y = \frac{1}{2}x$$

最適消費量 $x = 10 \quad y = 5$

$$U = x^{\frac{2}{3}} y^{\frac{1}{3}} = (20)^{\frac{2}{3}} (5)^{\frac{1}{3}} = (2000)^{\frac{1}{3}}$$

$$y = \frac{1}{2}x \text{ 代入 } U = 2000^{\frac{1}{3}}$$

$$U = x^{\frac{2}{3}} y^{\frac{1}{3}} = \left(\frac{1}{2}x\right)^{\frac{1}{3}} : 2000^{\frac{1}{3}}$$

$$x = (4000)^{\frac{1}{3}} \approx 15.8740, \quad y = 500^{\frac{1}{3}}$$

① 替代效果由 $(x, y) = (20, 5)$ 到 $\left[(4000)^{\frac{1}{3}}, (500)^{\frac{1}{3}}\right]$

$$x \text{ 的替代效果} : 4000^{\frac{1}{3}} - 20 < 0$$

② 所得效果由 $(x, y) = \left[(4000)^{\frac{1}{3}}, (500)^{\frac{1}{3}}\right]$ 到 $(10, 5)$