

$$x = 0, y = 30$$

$$\Rightarrow x = 0, y = 30$$

13)

$$U = f(x, y) = 20x + 10y$$

$$300 = 20x + 10y$$

$$x = 2y \quad 300 = 40y + 10y$$

$$\Rightarrow y = 6, x = 12$$

14) 1000

$$\text{由 } (x, y) = (100, 1)$$

15)

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$$x = 100, y = 1$$

4.

$$(1) \quad MR_{xy} = \frac{\frac{1}{2}x - \frac{1}{2}y}{\frac{1}{2}x} = \frac{1}{2} \neq \frac{1}{2} \neq y = 4x$$

$$(2) \quad y = 4x \quad 100 = 20x + 10y = 60x \Rightarrow x = \frac{100}{60}$$

$$(3) \quad MR_{xy} = \frac{y}{2x} = \frac{p_x}{p_y} \neq x = \frac{y p_y}{2 p_x}$$

$$(4) \quad MR_{xy} = \frac{y}{2x} = \frac{p_x}{10} \Rightarrow 10y = 2x p_x \Rightarrow y = \frac{p_x}{5} x$$

$$300 = 20x + \frac{2 p_x}{5} x$$

$$\Rightarrow (20 + 2 p_x) x = 300$$

$$\Rightarrow x = \frac{300}{20 + 2 p_x}$$