

$$1 \quad \textcircled{1} \quad \frac{P_x}{P_y} = \frac{2xy}{x^2} = \frac{10}{2x} \rightarrow x=4y$$

$$\textcircled{2} \quad y = \frac{1}{4}x$$

$$x = \frac{M}{15}$$

$$\textcircled{3} \quad \frac{y}{x} = \frac{P_x}{20}$$

$$\rightarrow y = \frac{P_x}{40} x$$

$$300 = P_x x + 2 \left[ \frac{P_x}{40} x \right] \rightarrow a = \frac{200}{P_a}$$

4. 所得消費曲線與恩格爾曲線可知  
財貨為正常財由需求曲線可知  
財貨符合需求法則