

$$4. \log a^2 + \log b^2 = \log c^2$$

$$a^2 b^2 = c^2 \rightarrow ab = c$$

$$\text{且因為 } a^2 + b^2 = c^2$$

$$\text{所以 } a^2 + b^2 = a^2 b^2 \text{ 又 } c \geq b \geq a > 0$$

$$\text{整理得 } b^2 = \frac{a^2}{a^2 - 1} \geq a^2$$

$$\text{故, } 0 < a^2 - 1 \leq 1$$

$$0 < a^2 \leq 2$$

$$0 < a \leq \sqrt{2} \text{ 故 } a \text{ 最大可能為 } \sqrt{2}$$