

北一女中 106 學年度《數戰數決》有獎徵答活動

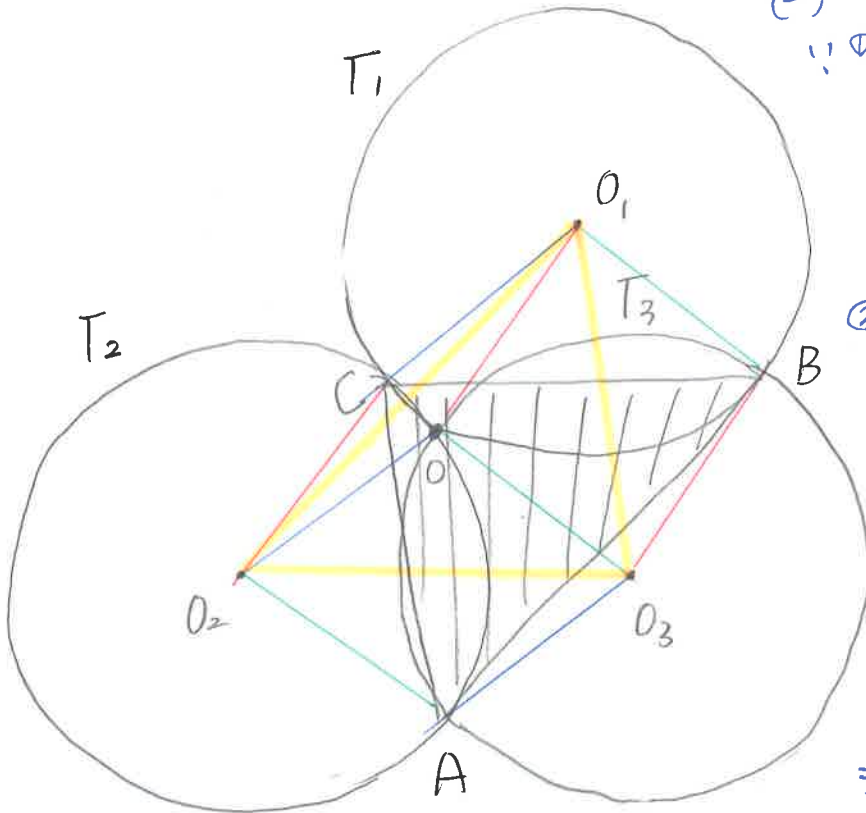
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題號：5-4

頁碼/總頁數：3/4 (如果只有一頁，可不填)

10

令圓 T_1, T_2, T_3 的圓心為 O_1, O_2, O_3



(一)
 $\because \overline{O_1O} = r = \overline{O_3B} = \overline{O_1B} = \overline{OO_3}$

$\overline{O_1O_3} \perp \overline{OB}$

$\Rightarrow O_1BO_3O$ 為菱形

② $\overline{OO_3} = r = \overline{O_2A} = \overline{OO_2} = \overline{O_3A}$

$\overline{O_2A} \perp \overline{OO_3}$

$\Rightarrow OO_3AO_2$ 為菱形

③ $\overline{OO_1} = r = \overline{CO_2} = \overline{CO_1} = \overline{OO_2}$

$\overline{O_1O_2} \perp \overline{CO}$

$\Rightarrow CO_1OO_2$ 為菱形

(二)

而 $\because \overline{OO_1} = \overline{OO_2} = \overline{OO_3}$

$\therefore O$ 為 $\triangle O_1O_2O_3$ 的外心

$\Rightarrow \triangle O_1O_2O_3$ 的外接圓半徑 = r

又 $\triangle ABC \cong \triangle O_1O_2O_3$

可知 $OABC$ 的外接圓半徑 = r

$\therefore \overline{BO_3} \parallel \overline{CO_2} \parallel \overline{OO_1}$,

$\overline{O_1C} \parallel \overline{O_2O} \parallel \overline{O_3A}$,

$\overline{O_1B} \parallel \overline{OO_3} \parallel \overline{O_2A}$.

$\Rightarrow CBO_3O_2, CAO_3O_1, O_2ABO_1$

皆為平行四邊形 (雙對邊
平行且相等)

$\Rightarrow \overline{CB} = \overline{O_2O_3}, \overline{CA} = \overline{O_1O_3}, \overline{AB} = \overline{O_2O_1}$

$\triangle ABC \cong \triangle O_1O_2O_3$ (SSS)