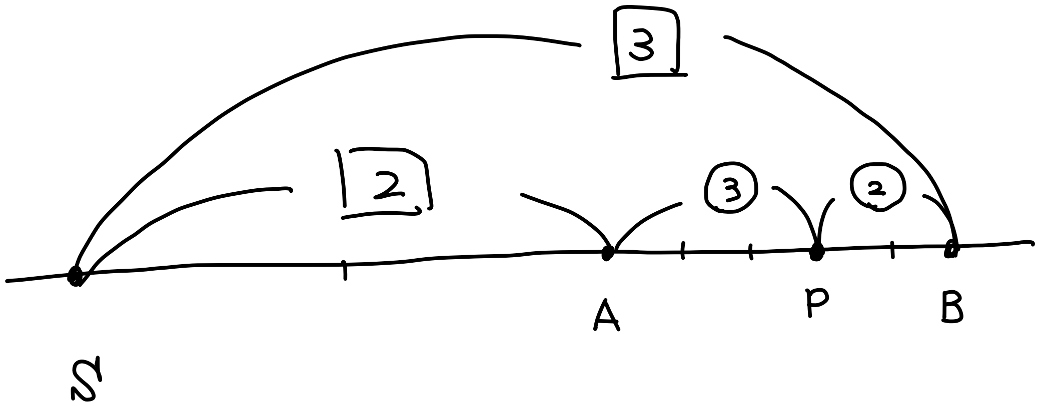
第16回答え

Ⅱ。 (1) (2)



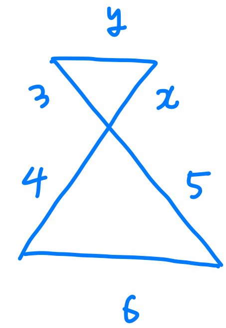
2。 (1)

$3 : 5 = x : 4$

$5x = 12$

$x = \dfrac{12}{5}$

$y = 6 \cdot \dfrac{3}{5} = \dfrac{18}{5}$



(2) 右図のように点Dを定める。

$OD : 2 = OD+2 : 3$

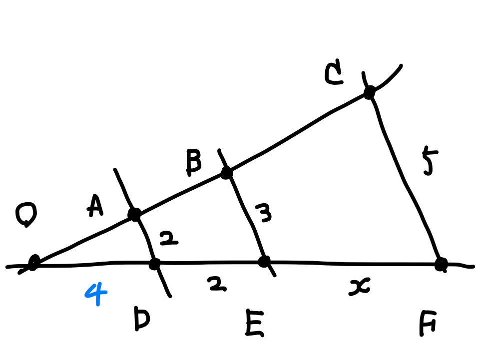
$2OD + 4 = 3OD$

$\therefore OD = 4$

$4 : 2 = 6+x : 5$

$20 = 12 + 2x$

$\therefore x = 4$



2. (3) $AB : AC = BD : DC$

より

$12 : 8 = 10-x : x$

$2(10-x) = 3x$

$5x = 20$

$x = 4$ //

$AB : AC = BE : EC$

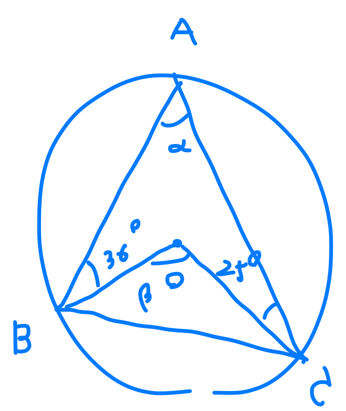
より

$3 : 2 = y : y-10$

$2y = 3y - 30$

$\therefore y = 30$ //

B. (7) $\begin{cases} \beta = 2\alpha \\ \alpha + 36^\circ + 25^\circ = \beta \end{cases}$



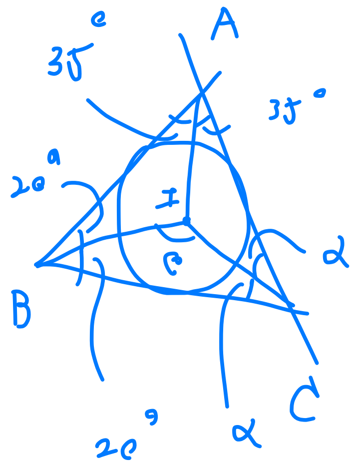
$\begin{cases} \beta = 2\alpha \\ \alpha = 61^\circ \end{cases}$

$\begin{cases} \alpha = 61^\circ \\ \beta = 122^\circ \end{cases}$ //

3. (2)
$$\begin{cases} 70^\circ + 40^\circ + 2\alpha = 180^\circ \\ 20^\circ + \alpha + \beta = 180^\circ \end{cases}$$

$$\begin{cases} \alpha = 90^\circ - 35^\circ - 20^\circ \\ \beta = 180^\circ - 20^\circ - \alpha \end{cases}$$

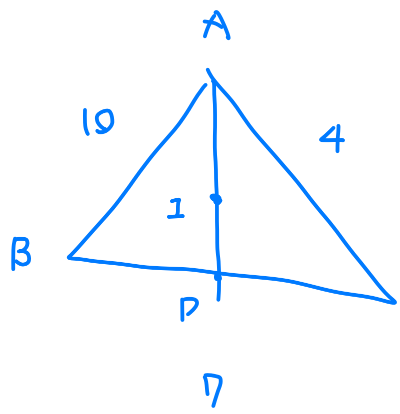
$$\begin{cases} \alpha = 35^\circ \\ \beta = 125^\circ \end{cases} \text{ //}$$



4. $BD : DC = 5 : 2$ //

$BD = 7 \times \frac{5}{7} = 5$

$AI : ID = 2 : 1$ //



5. $\triangle ABD = \frac{S}{2}$ //

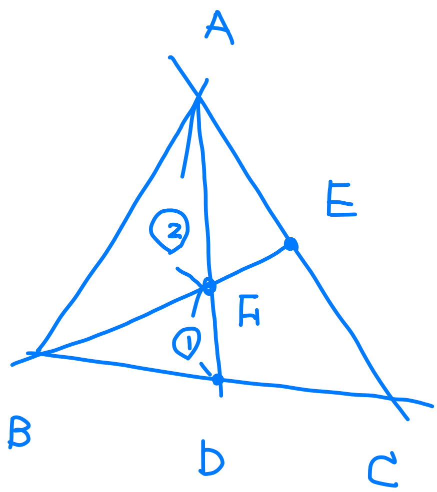
$\vec{AF} = k\,\vec{AD}$

$= \frac{k}{2}\vec{AB} + \frac{k}{2}\, 2\, \vec{AE}$

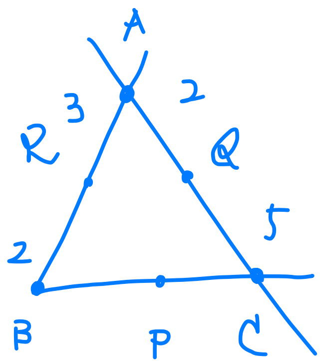
$\frac{k}{2} + k = 1$

$k = \frac{2}{3}$

$\therefore \triangle ABF = \frac{S}{2} \times \frac{2}{3} = \frac{S}{3}$ //



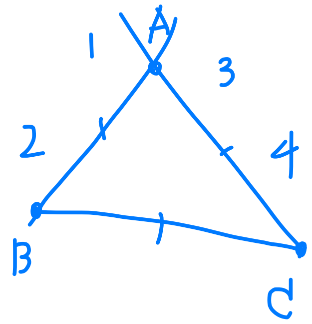
6. (1) $\frac{2}{5} \times \frac{2}{3} \times \frac{PC}{BP} = 1$



$\frac{PC}{BP} = \frac{15}{4}$

$\therefore BP : PC = 4 : 15$ //

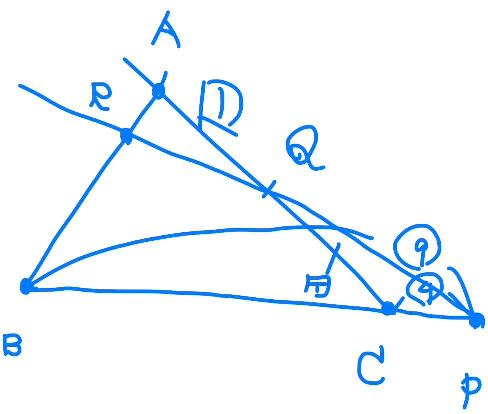
(2) $\frac{3}{4} \times \frac{2}{1} \times \frac{PC}{BP} = 1$



$\frac{PC}{BP} = \frac{4}{6}$

$\therefore BP : PC = 3 : 2$ //

7. (1) $\frac{RB}{AR} \times \frac{4}{9} \times \frac{1}{1} = 1$

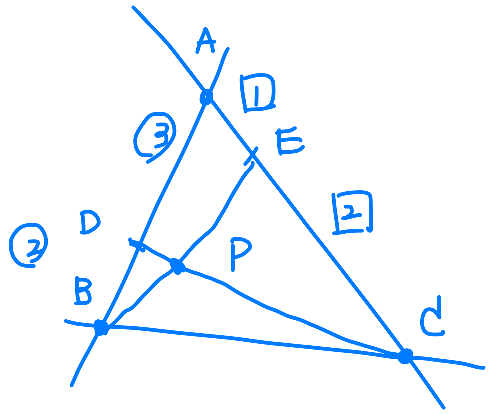


$RB : AR = 9 : 4$ //

Ⅴ. (2) $BP : PE = s : 1-s$,

$CP : PD = t : 1-t$

とすると、



$$\overrightarrow{AP} = (1-s)\overrightarrow{AB} + s\,\frac{1}{3}\overrightarrow{AC}$$

$$= t\,\frac{3}{5}\overrightarrow{AB} + (1-t)\overrightarrow{AC}$$

で、$\overrightarrow{AB}$ と $\overrightarrow{AC}$ は互いに1次独立なので、

$$\begin{cases} 1-s = \frac{3}{5}t \\ \frac{s}{3} = 1-t \end{cases}$$

$$\begin{cases} \frac{1}{3} - \frac{s}{3} = \frac{1}{5}t \\ \frac{s}{3} = 1-t \end{cases}$$

$$\begin{cases} \frac{1}{3} - 1 + t = \frac{1}{5}t \\ s = 3(1-t) \end{cases}$$

$$\begin{cases} \frac{\cancel{4}^{2}}{5}t = \frac{\cancel{2}^{1}}{3} \\ s = 3(1-t) \end{cases}$$

$$\begin{cases} t = \frac{5}{6} \\ s = \frac{1}{2} \end{cases}$$

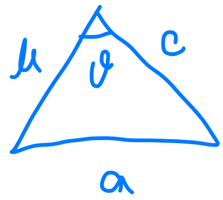
∴ $BP : PE = 1 : 1$ //

$CP : PD = \frac{5}{6} : \frac{1}{6}$

$= 5 : 1$ //

8. (1) $6 > 2+3$

$\therefore$ 存在しない。



(2) $8^2 < 7^2 + 5^2$

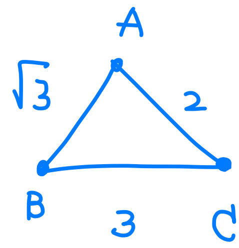
$\therefore$ 存在する。

$$a^2 = b^2 + c^2 \underline{- 2bc\cos\theta}$$

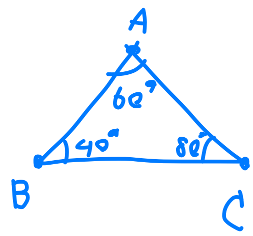
鋭角なら
へらす

9. (1) $\angle C < \angle B < \angle A$

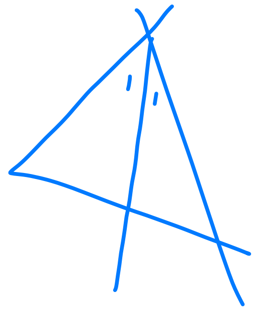
≦でも可



(2) $AC < BC < AB$



Ⅱ①。 $\angle A = 2\alpha$, $\angle B = \beta$ とする。



このとき、

$$\underbrace{180^\circ - (\alpha+\beta)}_{\angle ADB} - \alpha$$

$$= 180^\circ - \beta - 2\alpha$$

$$= \angle C$$

$\therefore \angle ADB > \angle BAD$

$\therefore AB > BD$ 〃

≧でも可