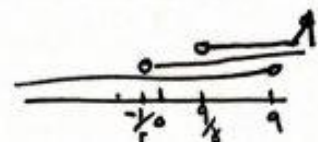


[illegible]

$$r\lambda - 2 + 2\lambda > 2 + \delta \Rightarrow \delta\lambda > 9 \Rightarrow \lambda > 9$$

$$r\lambda - 2 + 2\lambda > r\lambda \Rightarrow r\lambda > -1 \Rightarrow \lambda > -\frac{1}{r}$$



$$r\lambda + 2 + \delta > r\lambda - 2 \Rightarrow \lambda < 9$$

$$r\lambda + 2 + \delta > r\lambda - 2 \Rightarrow \lambda < 9$$

$$r\lambda + 2 + \delta > r\lambda - 2 \Rightarrow \lambda < 9$$

$$\Delta ACE = r \Delta ADE \Rightarrow \frac{\Delta ACE}{\Delta ADE} = \frac{CE}{DE} = r \Rightarrow CE = rDE$$

$$\Delta ACE = r \Delta ABD \Rightarrow \frac{\Delta ACE}{\Delta ABD} = r \Rightarrow \frac{CE}{BD} = r \Rightarrow BD = \frac{CE}{r} = \frac{rDE}{r}$$

$$\frac{CE}{BC} = \frac{rDE}{\frac{rDE}{r} + DE + rDE} = \frac{r}{\frac{1}{r} + 1 + r} = \frac{r}{\frac{1+r^2+r^2}{r}} = \frac{r^2}{1+r^2+r^2}$$

$$\text{وحيث } AB \parallel A'B', BC \parallel B'C'$$

$$\text{فك } AC \parallel A'C'$$

$$\text{من } \Delta A'B': AB \parallel A'B' \Rightarrow \frac{OA}{AA'} = \frac{OB}{BB'}$$

$$\text{من } \Delta B'C': BC \parallel B'C' \Rightarrow \frac{OB}{BB'} = \frac{OC}{CC'}$$

$$\Rightarrow \frac{OA}{AA'} = \frac{OC}{CC'} \Rightarrow AC \parallel A'C'$$

$$DE \parallel BC \Rightarrow \frac{x}{r} = \frac{2-\delta}{2\lambda} \Rightarrow 2\lambda x = r(2-\delta) \Rightarrow$$

$$1/\delta = 2\lambda - 2\lambda x \Rightarrow x = \frac{1}{2}$$

$$DE \parallel BC \Rightarrow \frac{AD}{AB} = \frac{AE}{AC} = \frac{DE}{BC} \Rightarrow \frac{DE}{r\delta} = \frac{r}{2} \Rightarrow DE = \frac{9}{2} = 4.5$$

$$P_{DECB} = r + x + 2\delta + 1.8 + 4.5 = 11.8$$

$$\text{الف) } FB \parallel AE \Rightarrow \frac{BC}{AC} = \frac{FB}{AE} = \frac{CF}{CE}$$

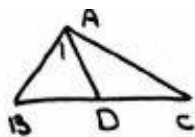
$$FB \parallel BC \Rightarrow \frac{AB}{AC} = \frac{BF}{DC} = \frac{AF}{AD}$$

$$\frac{BC+AB}{AC} = \frac{FB}{AE} + \frac{BF}{DC} = \frac{CF}{CE} + \frac{AF}{AD} \Rightarrow$$

$$\frac{AC}{AC} = FB \left(\frac{1}{AE} + \frac{1}{DC} \right) \Rightarrow 1 = r \left(\frac{1}{2} + \frac{1}{4} \right) \Rightarrow \frac{1}{r} - \frac{1}{4} = \frac{1}{2}$$

$$\frac{r-1}{4} = \frac{r}{4} - \frac{1}{4} = \frac{1}{2} \Rightarrow r = 3$$

$$\text{ب) } DE \parallel FB \Rightarrow \frac{AD}{DF} = \frac{AE}{EB} \Rightarrow \frac{r}{4} = \frac{AE}{EB} \Rightarrow \frac{1}{r} = \frac{9}{\lambda} \Rightarrow \lambda = 18$$



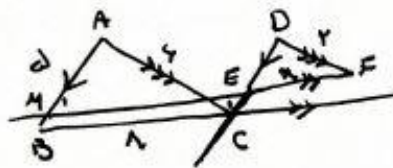
چون $ABC \sim A'B'C' \Rightarrow A_1 = A_2 = A_3, A'_1 = A'_2 = A'_3$ (۱۳)
 پس $\frac{A'D'}{AD} = k$

چون $\hat{A} = A' \Rightarrow \hat{A}_1 = \hat{A}'_1$
 و $B = B'$ } $\Rightarrow ABD \sim A'B'D' \Rightarrow \frac{A'B'}{AB} = \frac{A'D'}{AD} = \frac{B'D'}{BD} \Rightarrow$
 $\frac{A'D'}{AD} = k$

$\frac{BC}{BD} = \frac{F}{D} = \frac{AB}{DE} = \frac{EC}{AC} = \frac{AD}{ED} \Rightarrow \frac{BC}{BD} = \frac{AB}{DE} = \frac{AC}{DE} = \frac{1}{D}$ -۱۵
 سطح متساوی

$ABC \sim BDE \Rightarrow \begin{cases} 2x - y = x + y \Rightarrow x + y = y \\ y + 15 = 2x - 1 \Rightarrow 2x - 14 = y \end{cases} \Rightarrow$

$x + y = 2x - 14 \Rightarrow 2x = x \Rightarrow 2x = x$ و $y = 2x + 14 = 30$



$AB \parallel DC + AC \Rightarrow \hat{A} = \hat{C}_1$
 $DF \parallel AC + DC \Rightarrow \hat{D} = \hat{C}_1 \Rightarrow \hat{A} = \hat{D}$ -۱۶
 $FM \parallel BC + AB \Rightarrow \hat{M}_1 = \hat{B}$
 $AB \parallel DC + MF \Rightarrow \hat{M}_1 = \hat{E} \Rightarrow \hat{B} = \hat{E}$

$\Rightarrow ABC \sim DEF \Rightarrow \frac{y}{4} = \frac{x}{\lambda} \Rightarrow x = 2$

$AB' = VAB \Rightarrow \dots \Rightarrow FA' = VFA, A = A' \dots F = F' \Rightarrow ABCDEF \sim A'B'C'D'E'F'$ -۱۷
 $\Rightarrow k = V \Rightarrow \frac{S'}{S} = k^2 = 29$

$\frac{AM}{MB} = \frac{1}{3} \Rightarrow \frac{AM}{AB} = \frac{1}{4}, \frac{MB}{AB} = \frac{3}{4}$

$MN \parallel BC \Rightarrow \frac{AM}{AB} = \frac{AN}{AC} = \frac{MN}{BC} = \frac{1}{4}$
 $MD \parallel AC \Rightarrow \frac{MD}{AC} = \frac{MB}{AB} = \frac{1}{4}$
 $\Rightarrow \frac{S_{MNP}}{S_{ABC}} = \left(\frac{1}{4}\right)^2 = \frac{1}{16}$
 $\Rightarrow \frac{S_{MNP}}{S_{ABC}} = \frac{1}{16} \Rightarrow S_{MNP} = \frac{1}{16} S_{ABC}$