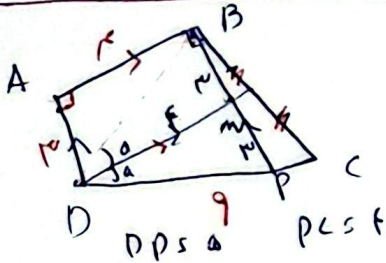


$$\frac{S_{BCE}}{S_{ADE}} = \frac{\frac{1}{2} \times h \times BC}{\frac{1}{2} \times h \times DE} = \frac{15}{5} = 3$$

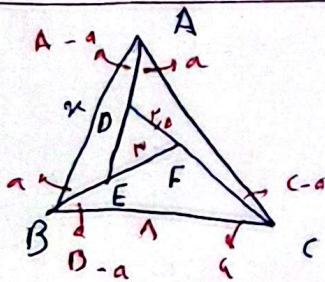
$$\frac{DE}{BC} = \frac{AD}{AB} = \frac{5}{15}$$

(1)



$$m_E = \frac{1}{2} PC \Rightarrow m_E = \frac{1}{2} \times 15 = 7.5$$

(2)



$$\frac{r_1}{r_2} = \frac{m}{n} \Rightarrow m = \frac{r_1}{r_2} \times n$$

(3)

(4)

BM, AM $\leq \frac{1}{2}$

(f)

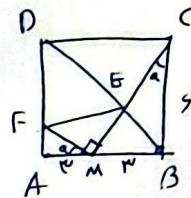
$$BM \parallel DE \Rightarrow BME \sim DEC \Rightarrow \frac{ME}{CE} = \frac{BM}{DC} = \frac{\frac{1}{2}}{1} = \frac{1}{2}$$

$$\Rightarrow BE^2 = CE^2 = BC^2 + BM^2 = 1^2 + \left(\frac{1}{2}\right)^2 = \frac{5}{4} \Rightarrow CE = \frac{\sqrt{5}}{2}$$

$$\Rightarrow ME = \frac{\sqrt{5}}{2}, CE = \frac{\sqrt{5}}{2}$$

$$AMF \sim BCM \Rightarrow \frac{AM}{BC} = \frac{MF}{MC} \Rightarrow \frac{\frac{1}{2}}{1} = \frac{MF}{\frac{\sqrt{5}}{2}} \Rightarrow MF = \frac{\sqrt{5}}{4}$$

$$S_{MFE} = \frac{1}{2} \times ME \times MF = \frac{1}{2} \left(\frac{\sqrt{5}}{2} \times \frac{\sqrt{5}}{4} \right) = \frac{5}{16}$$



$$ABE: AE^2 = AB^2 + BE^2 = 1^2 + \left(\frac{\sqrt{5}}{2}\right)^2 \Rightarrow AE = \sqrt{1 + \frac{5}{4}} = \frac{\sqrt{9}}{2} = \frac{3}{2}$$

(g)

$$E_1 \in E_1 \Rightarrow AE \sim AED \Rightarrow \frac{AE}{ED} = \frac{EC}{AE} \Rightarrow (AE)^2 = ED \times EC \Rightarrow 1 + \frac{5}{4} = 1 \times (1 + \frac{5}{4})$$

$$DAE \sim ACD \Rightarrow$$

$$1 + \frac{5}{4} = 1 + \frac{5}{4} \Rightarrow \frac{1 + \frac{5}{4}}{\frac{5}{4}} = \frac{1 + \frac{5}{4}}{\frac{5}{4}} \Rightarrow \frac{1 + \frac{5}{4}}{\frac{5}{4}} = \frac{1 + \frac{5}{4}}{\frac{5}{4}} \Rightarrow \frac{1 + \frac{5}{4}}{\frac{5}{4}} = \frac{1 + \frac{5}{4}}{\frac{5}{4}}$$

$$DEC \sim EFC \Rightarrow DE \times EC = EF^2 \Rightarrow 1 \times \frac{5}{4} = EF^2 \Rightarrow EF = \frac{\sqrt{5}}{2}$$

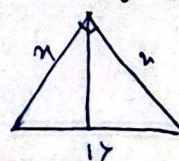
(h)

$$ABC \sim BFC \Rightarrow AF \times FC = BF^2 \Rightarrow 1 \times \frac{5}{4} = BF^2 \Rightarrow BF = \frac{\sqrt{5}}{2}$$

$$BFC \sim BCF \Rightarrow BF^2 + FC^2 = BC^2 \Rightarrow \left(\frac{\sqrt{5}}{2}\right)^2 + \left(\frac{5}{4}\right)^2 = 1^2 \Rightarrow \frac{5}{4} + \frac{25}{16} = 1 \Rightarrow \frac{25}{16} = 1 - \frac{5}{4} = -\frac{1}{4}$$

$$m^2 + n^2 = 1^2 \Rightarrow m^2 = 1 - n^2 = 1 - \frac{1}{4} = \frac{3}{4} \Rightarrow m = \frac{\sqrt{3}}{2}$$

$$\sqrt{(1\sqrt{2})^2 + (\sqrt{2})^2} = 1\sqrt{2} + \sqrt{2} = 1\sqrt{2} = \sqrt{2}$$



اینکه در این حالت
در حالت دیگر
بالاتر

AB و AC مساحتی برابر دارند و EF و DE مساحتی برابر دارند

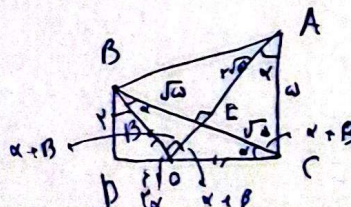
(i)

$$BC \leq \sqrt{2^2 + 2^2} = 2\sqrt{2} \leq 2BE + 2EC$$

$$BE + EC \leq \sqrt{2}$$

$$\frac{1}{\sqrt{2}} \leq \frac{1}{AE} \leq \frac{1}{\sqrt{2}} \Rightarrow AE = \sqrt{2} \Rightarrow S_{ABC} = \frac{AE \times EF}{2} = \frac{(2\sqrt{2})(\sqrt{2})}{2} = 2$$

$$BCD \sim AEC$$

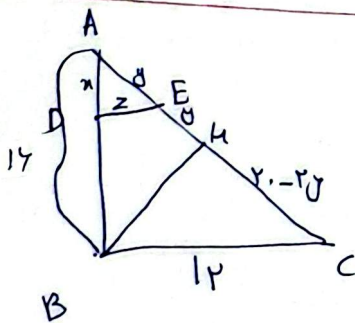
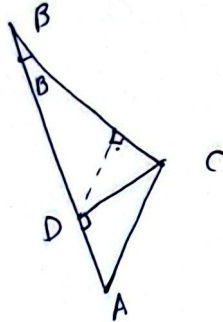


$$ABC \sim \sqrt{1} \text{ and } \sqrt{1}.$$

$$BCD, CD \text{ and } AD \text{ and } 9 \Rightarrow BD = \frac{9 \times 1}{\sqrt{1}} = \frac{9}{1} \sqrt{1} \Rightarrow BD = \frac{9 \times \sqrt{1} \times 1}{\sqrt{1}}$$

$$BDE, DE \text{ and } BE \text{ and } BD$$

$$= \frac{9 \times 1}{\sqrt{1}} = \sqrt{1}$$



$$ADE \sim ABC \sim \frac{x}{14} = \frac{y}{14} = \frac{z}{14}$$

(1)

$$HBC \sim ABC \sim \frac{y - y_1}{14} = \frac{14}{14}$$

$$\Rightarrow (y - y_1) 14 = 14 \Rightarrow 0 \leq y_1$$

$$\frac{y_1}{14} = \frac{z}{14} \sim z = \sqrt{y_1 14}$$