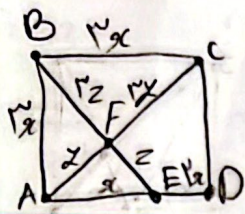


«A» (متردد)

12



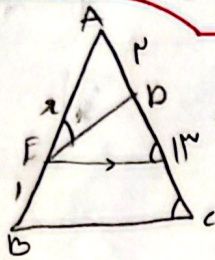
$$BE \rightarrow \sqrt{2^2 + 1^2} = \sqrt{5}x$$

$$EF \rightarrow \frac{1}{2} \sqrt{10}x$$

$$AC \rightarrow 2\sqrt{2}x$$

$$\frac{EF}{AF} = \frac{\frac{1}{2} \sqrt{10}x}{\frac{1}{2} \times 2\sqrt{2}x} = \frac{\sqrt{5}}{2}$$

(1) - 1



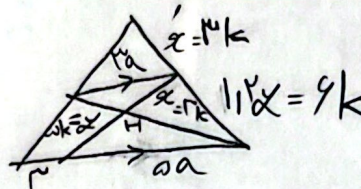
$$\triangle ADE \sim \triangle ABC \Rightarrow \frac{2}{x+1} = \frac{x}{10} \Rightarrow x = 10$$

(1) - 2

$$x = 2k$$

$$\frac{2a}{2+10a} = \frac{2k}{9k} = \frac{1}{9} \rightarrow a = \frac{2}{9} = 0.1\overline{1}$$

$$BC = 9/10$$



(1) - 3

$$(AB)^r = BH \times BC = 10$$

$$(AC)^r = CH \times BC = 20$$

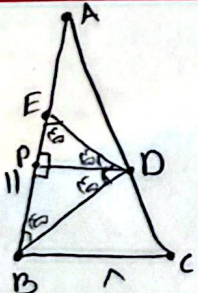
$$\frac{AB}{AC} = \frac{1}{2}$$

0 - 1

$$\triangle BAF \sim \triangle ECF \rightarrow \frac{BF}{EF} = \frac{AF}{CF} \rightarrow \frac{4}{x} = \frac{1+x}{10} \rightarrow x(x+1) = 40, x = 7$$

$$AF = 1+x = 17$$

(1) - 4



$$\frac{12}{2} = 6/10 \rightarrow \sqrt{60} = ED$$

$$DP = \frac{\sqrt{60}}{2} \times \sqrt{60} \Rightarrow 30 = EP, PD$$

$$\frac{x+10/10}{x+11} = \frac{10/10}{10}$$

$$10x+10 = 10x+10 \rightarrow x = 9/10$$

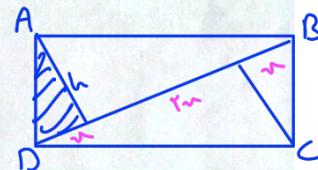
(1) - 5

$$ABD = h^r = n \times 2n \rightarrow h = \sqrt{2}n$$

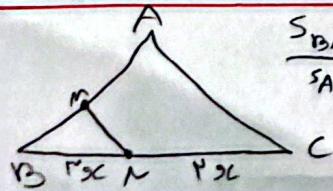
$$S_{\triangle ABD} = \frac{hn}{2} = \frac{\sqrt{2}n^2}{2}$$

$$S_{\square} = 2S_{\triangle ABD} = 2 \times \frac{\sqrt{2}n^2}{2} = \sqrt{2}n^2$$

$$\frac{\sqrt{2}n^2}{\frac{\sqrt{2}n^2}{2}} = 2$$

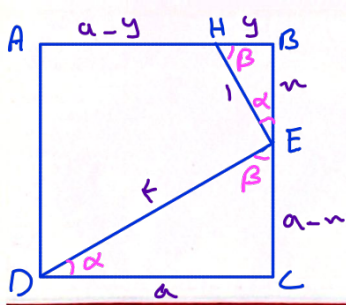


0 - 6



$$\frac{S_{BMV}}{S_{ABC}} = \frac{BM \times BN}{BA \times BC} = \frac{BM}{AB} \times \frac{1}{2} = \frac{1}{2} \rightarrow \frac{BM}{AB} = \frac{1}{2} \rightarrow \frac{BM}{AM} = \frac{1}{1} = 1$$

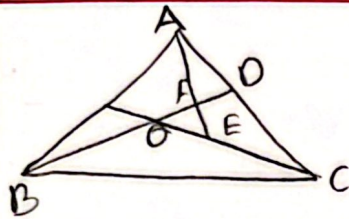
(1) - 7



$$\triangle EBH \sim \triangle DCE \rightarrow \frac{y}{a-n} = \frac{n}{a} = \frac{1}{r} \begin{cases} a = rn \\ a-n = ry \\ n = \frac{r}{n}y \end{cases}$$

$$S_{\square} = a^2 = \boxed{\frac{254}{25}}$$

$$\triangle DCE \xrightarrow{\text{پیتاگورس}} (r)^2 = (a-n)^2 + (a)^2 \rightarrow n = \frac{r}{a}$$



$$\begin{aligned} BF &= FD, GE = EC \\ BD &= BF + FD = FD + FD = 2FD \\ \frac{BD}{FD} &= \boxed{2} \end{aligned}$$

$$\text{محلول برصغور مساند ها} \quad G \rightarrow BG = 2n \quad GD = n \rightarrow BD = 3n$$

از A به G وصل کنیم، AE، GD، AGC مساند ها هستند:

$$\begin{aligned} GF &= \frac{2}{3}n \\ FD &= \frac{1}{3}n \end{aligned} \Rightarrow \frac{BD}{FD} = \frac{3n}{\frac{1}{3}n} = \boxed{9}$$