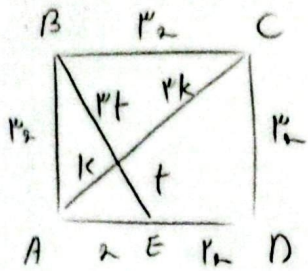


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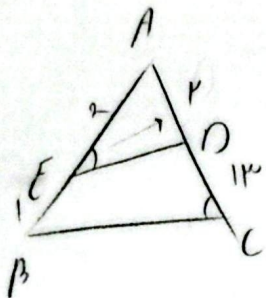
برای این



$$\frac{t}{2} = \frac{BE}{AC} = \frac{1}{\sqrt{2}} = \frac{\sqrt{1 \cdot 2}}{\sqrt{1 \cdot 2}} = \sqrt{\frac{1}{1}} = \sqrt{\frac{2}{2}}$$

(1) د

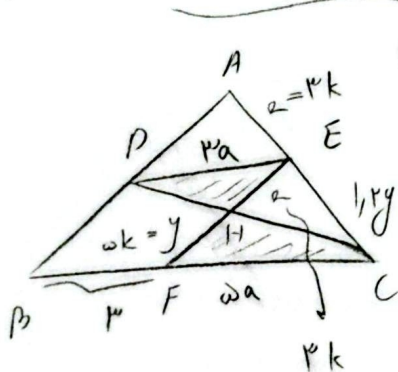
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$$\frac{2}{1} = \frac{1}{1} \quad 1 \cdot 2 = 2 \quad 2 = \frac{1}{1} \quad (2+1)(2-1) = 0 \quad \begin{cases} 2 = -1 \\ 2 = 1 \end{cases}$$

$$\frac{1}{1+2} = \frac{2}{10} \quad 2+2^2 = 10 \quad 2^2+2-10 = 0$$

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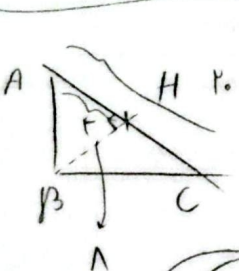
BC = ?

$$2 = 1 \cdot 1 \quad 1 = 1 \cdot 1$$

$$\frac{1}{1+2} = \frac{2}{10} = \frac{1}{5}$$

$$a = \frac{1}{5} = 1/5 \quad BC = 1 + 2(1/5) = 4/5$$

۵



$$\frac{AB}{BC} = ?$$

$$BH^2 = AH \times HC \Rightarrow 1 \times 1 = BH^2$$

$$BH = 1$$

(1) د

$$AB^2 = BH^2 + AH^2 \Rightarrow AB^2 = 1^2 + 1^2 = 2$$

$$AB = \sqrt{2} = \sqrt{1 \times 2}$$

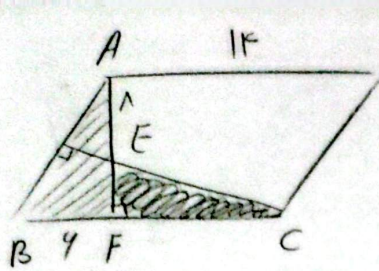
$$AB \times BC = BH \times AC$$

$$1 \times 1 = 1 \times 1$$

$$BC = \frac{1}{\sqrt{2}} \times \frac{\sqrt{2}}{1} = \frac{1}{1} = 1$$

$$\frac{AB}{BC} = \frac{1}{1} = 1$$

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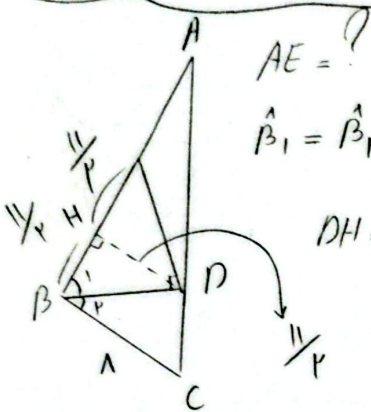


AF = 14 $\hat{P}AF \sim \hat{E}CF \Rightarrow$ (خط زاربی) (نکته)

$$\frac{BF}{EF} = \frac{AF}{CF} \Rightarrow \frac{4}{2} = \frac{14+z}{12} \Rightarrow 2(14+z) = 48$$

$$2z + 28 = 48 \Rightarrow (2+12)(z-4) = 0 \Rightarrow z = 4$$

AF = 14 + z = 18 جواب



AE = ?

$$\hat{A}_1 = \hat{A}_2 \Rightarrow \hat{A}_1 = \hat{A}_2 = 45^\circ$$

$$DH = BH = EH = \frac{11}{4}$$

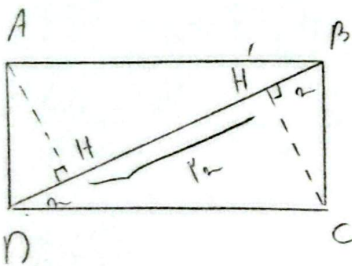
$$\frac{AH}{AB} = \frac{DH}{BC} \Rightarrow \frac{z + \frac{11}{4}}{11} = \frac{\frac{11}{4}}{11} \Rightarrow \frac{z+11}{z+11} = \frac{11}{11}$$

$$\Rightarrow 11z + 11 = 14z + 11 \Rightarrow z = 4$$

نکته 2) چون $BC \parallel DH$ است پس الزاماً زاویه $\hat{B}$ هم برابر است

میدان $\hat{E}DB$ قائم الزامی و متساوی الساقین است

$\Leftarrow$ اشاع DH میان دو برابر برقرار هست

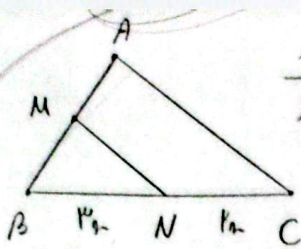


$\frac{P_{ABCD}}{P_{AHD}} = ?$ $AB^2 \cdot AD^2 = DH \times BD \Rightarrow y^2 = 2(2) \Rightarrow y = 2$

$$AB^2 \cdot AD^2 = BD^2 - AD^2 \Rightarrow AB^2 = (2)^2 - (2)^2 = 12 \Rightarrow AB = \sqrt{12}$$

$$ADH: AH^2 = AD^2 - DH^2 \Rightarrow AH^2 = (2)^2 - (2)^2 = 12 \Rightarrow AH = \sqrt{12}$$

$$\frac{P_{ABCD}}{P_{AHD}} = \frac{AB \times AD}{\frac{1}{2} AH \times DH} = \frac{(\sqrt{12})(2)}{\frac{1}{2}(\sqrt{12})(2)} = 1 \Leftarrow \text{جواب}$$

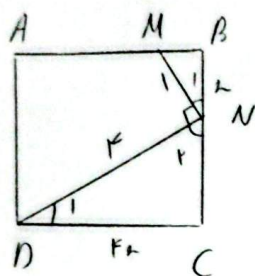


$$\frac{S_{BMN}}{S_{ABC}} = \frac{BM \times BN}{BA \times BC} = \frac{BM}{AB} \times \frac{1}{3} = \frac{1}{9}$$

(٩.٣)

٥

$$\frac{BM}{AB} = \frac{1}{9} \Rightarrow \frac{BM}{AM} = \frac{1}{8} \Rightarrow \boxed{1/8}$$



$$\hat{MND} = 90^\circ \Rightarrow \hat{N}_1 + \hat{N}_2 = 90^\circ$$

(٩.٤)

$$\hat{DNC} \Rightarrow \hat{C} = 90^\circ \Rightarrow \hat{N}_1 + \hat{N}_2 = 90^\circ$$

$$\hat{BMN} \approx \hat{DNC} \Rightarrow \frac{DN}{MN} = \frac{DC}{BN} \Rightarrow$$

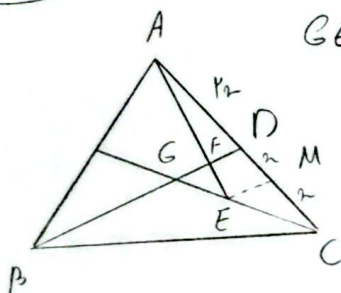
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$$\frac{1}{1} = \frac{DC}{BN} \Rightarrow DC = BN \Rightarrow BC = DC = BN \Rightarrow NC = BN = 1/2$$

$$\hat{DNC} \Rightarrow DN^2 = DC^2 + NC^2 \Rightarrow 1^2 = (1/2)^2 + (1/2)^2 \Rightarrow 1 = 1/2 \Rightarrow \boxed{1/2}$$

$$S_{ABCD} = \left(\frac{1}{2}\right)^2 = \frac{1}{4} = \boxed{1/4}$$

النتيجة



$$GE = EC \quad \frac{BD}{FD} = ? \quad \frac{GD}{BD} = \frac{1}{3}, AD = DC$$

(١٠.٣)

$$\hat{GDC}: EM \parallel GD \Rightarrow \frac{EC}{EG} = \frac{CM}{DM} \Rightarrow 1 = \frac{CM}{DM}$$

$$\Rightarrow CM = DM$$

$$\hat{AEM}: FD \parallel EM \Rightarrow \frac{AD}{AM} = \frac{FD}{EM} \Rightarrow \frac{1/3}{1/3} = \frac{FD}{EM} \Rightarrow EM = FD$$

$$AD = 1/3 \Leftarrow CM = DM = 1/3$$

$$\Rightarrow EM = \frac{1}{3} FD \quad \hat{GDC}: EM \parallel DG \Rightarrow \frac{CM}{CD} = \frac{EM}{GD} \Rightarrow \frac{1/3}{1} = \frac{EM}{GD}$$

$$\Rightarrow GD = 3EM \Rightarrow GD = 3\left(\frac{1}{3} FD\right) = FD$$

$$\frac{BD}{FD} = 9 \Leftarrow \frac{3FD}{BD} = \frac{1}{3} \Leftarrow \frac{GD}{BD} = \frac{1}{3}$$