

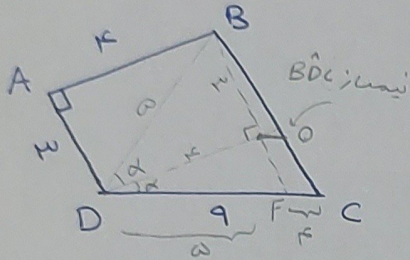
$$BC \parallel DE \Rightarrow \frac{S_{BCE}}{S_{BDE}}$$

ارتفاع ۲ مثلث یکسان پس نسبت مساحت هابرابر با نسبت قاعده هاست:  
 $DE \parallel BC \rightarrow \frac{AB}{AD} = \frac{AC}{AE} = \frac{BC}{DE} = \frac{12}{2}$

$$\frac{S_{BCE}}{S_{BDE}} = \frac{\frac{1}{2} h \times BC}{\frac{1}{2} h \times DE} = \frac{12}{2}$$

۱

ABCD، از نقاط B، D در باره خط به ترتیب موازی AB، AD، طرفین هم می‌کنیم که M سطح کت  
 $\hat{BDC} = 2\hat{BDM}$ ، فاصله M از وسط BC ؟

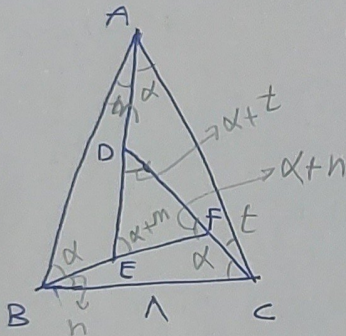


$DM = 4, BM = 3$ ، مستطیل A BMD  $\hat{A} = 90^\circ$   
 $\hat{MDB} = \hat{MDF}$ ، قائم الزامی  $\hat{D}_1 = \hat{D}_2$  پس  
 $FC = 4, DF = 0 \Rightarrow BM = MF = 3$

۲

$$\text{طبق تالس} \rightarrow \frac{BM}{BF} = \frac{MO}{FC} = \frac{3}{4} = \frac{1}{2} \rightarrow MO = 2$$

AB طول ۱۵، DF = ۲، ۳ = EF،  $\hat{ABF} = \hat{CAE} = \hat{BCD}$  ؟  
 اگر زاویه ها را اسم کنارش کنیم زاویه  $\hat{D}$  در مثلث DEF زاویه خارجي مثلث ADC = ۱  
 معرود  $\alpha + t$  (بقیه زوایا را به همین شکل بنویسیم)

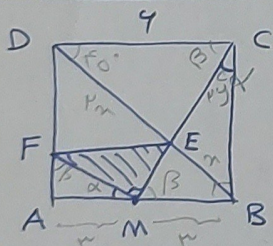


$$\left. \begin{array}{l} \hat{F} = \hat{B} \\ \hat{D} = \hat{C} \\ \hat{E} = \hat{A} \end{array} \right\} \rightarrow \frac{AB}{3} = \frac{1}{10} \rightarrow 10AB = 3F$$

$$AB = 9, 9$$

۳

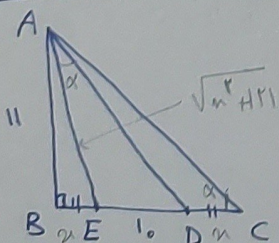
م بر AB،  $\hat{BCE} = \hat{AMF}$ ،  $S_{BCE} = S_{AMF}$  ؟  
 $\tan B = \frac{AM}{AF} = \frac{BC}{MB} \rightarrow \frac{3}{AF} = 2 \rightarrow AF = \frac{3}{2} \rightarrow MF = \sqrt{\left(\frac{3}{2}\right)^2 + 3^2} = \sqrt{\frac{9}{4} + 9} = \sqrt{\frac{45}{4}} = \frac{3\sqrt{5}}{2}$   
 $\hat{E}_1 = \hat{E}_2 \Rightarrow \hat{DCE} \sim \hat{MEB} \rightarrow \frac{CE}{EB} = \frac{DE}{EM} = \frac{4}{3} = 2 \Rightarrow CE = 4, EM = 2$   
 $y = \sqrt{5}$



$$S_{FEM} = \frac{1}{2} MF \times EM = \frac{1}{2} \times \frac{3\sqrt{5}}{2} \times \sqrt{5} = \frac{15}{4}$$

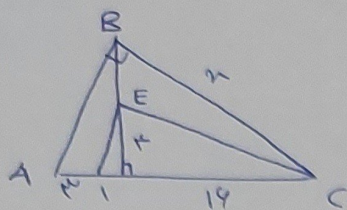
۴

BE = DC،  $\hat{DAE} = \hat{ACD}$  ؟  
 $\alpha = \alpha \Rightarrow \hat{E} = \hat{E} \Rightarrow \hat{D}_1 = \hat{A}_1 \Rightarrow \hat{CAE} \sim \hat{ADE} \rightarrow \frac{AE}{ED} = \frac{CE}{AE} \rightarrow \frac{\sqrt{n^2+121}}{1} = \frac{n+10}{\sqrt{n^2+121}}$



$$\begin{aligned} n^2 + 121 &= 10n + 100 \\ n^2 - 10n + 21 &= 0 \\ (n-3)(n-7) &= 0 \\ n &= 3 \text{ یا } n = 7 \end{aligned}$$

۵

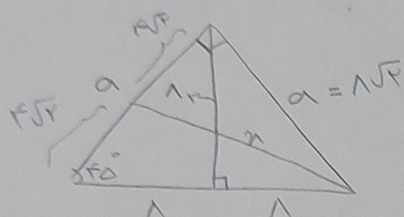


$$EF^2 = DF \times CF \rightarrow 14^2 = 1 \times CF \quad CF = 19$$

$$n^2 = CF \times AC \rightarrow n^2 = 19 \times 20$$

$$n = \sqrt{19 \times 20} = 19\sqrt{10}$$

9



$$14^2 = 19^2$$

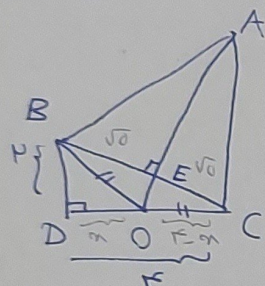
وقت باید وارد در نصف آن است - مثلث قائم الزامی

$$a^2 = 19 \times 19$$

$$a = 19 \times 2\sqrt{2} = 19\sqrt{2}$$

$$n^2 = \sqrt{(19\sqrt{2})^2 + (19\sqrt{2})^2} = \sqrt{14} = 4\sqrt{10}$$

10



$$BC = \sqrt{17^2 + 1^2} = 17\sqrt{2}$$

مساحت مثلث ABC = مساحت مثلث BOC + مساحت مثلث AOC

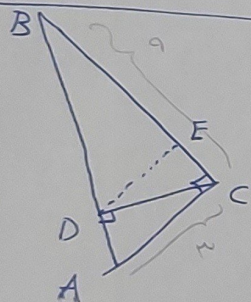
$$(17\sqrt{2})^2 = 17^2 + n^2 \quad n^2 = 17^2 + 19^2 = n^2 + 1 \quad n = \frac{17}{1}$$

$$BO = 17 - n = 17 - \frac{17}{1} = \frac{17}{1}$$

$$OEC \text{ مثلث} \rightarrow OE^2 = \left(\frac{17}{1}\right)^2 - (17\sqrt{2})^2 = \frac{17}{1} \quad OE = \frac{17}{1}$$

$$AO \times OE = OC^2 \quad AO \times \frac{17}{1} = \left(\frac{17}{1}\right)^2 \quad AO \times \frac{17}{1} = \frac{17}{1} \quad AO = \frac{17}{17} = \frac{17}{17} \quad \boxed{17}$$

$$S_{ABC} = \frac{1}{2} \times 17\sqrt{2} \times \left(\frac{17}{1} - \frac{17}{1}\right) = \boxed{17}$$



$$(\hat{C} = 90^\circ) \Rightarrow BE \perp BC \perp DE, \quad BC = 9, \quad AC = 17$$

$$BC^2 = BD \times AB \rightarrow 9^2 = BD \times 17, \quad BD = \frac{81}{17} = \frac{17}{17}$$

$$BD^2 = BE \times BC \rightarrow \left(\frac{17}{17}\right)^2 = BE \times 9$$

$$BE = \frac{17 \times 17}{10 \times 9} = \boxed{17/1}$$

17

$$\hat{DE} \text{ مثلث} = \hat{ABC} \text{ مثلث} \quad BC = 17 \quad AB = 19$$

$$AC = 20$$

$$BH \times AC = AB \times BC \rightarrow BH \times 20 = 17 \times 19 \rightarrow BH = \frac{17 \times 19}{20} = 16, 19$$

$$AH = \sqrt{17^2 - 16, 19^2} = 17, 19 \quad AE = 17, 19$$

$$\hat{A} = \hat{A} \quad \hat{H} = \hat{D} \quad \hat{ADE} \sim \hat{AHB}$$

$$\frac{DE}{BH} = \frac{AE}{AB}$$

$$\frac{DE}{17, 19} = \frac{17, 19}{17} \rightarrow DE = \boxed{17, 19}$$

17, 19