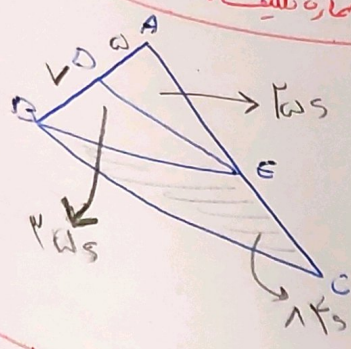


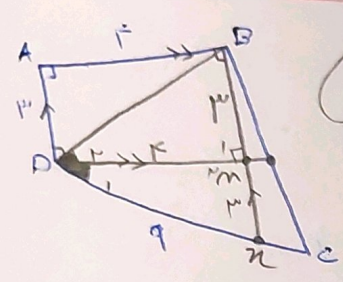


$BC \parallel DE$

$$\frac{S_{\triangle BCE}}{S_{\triangle BDE}} = ? \Rightarrow \frac{18}{12} = \frac{12}{\omega} = 1.5$$

$$V S_{ADE} = \omega S_{BDE} \quad (\text{به نسبت قاعده تقسیم شود})$$

$$\frac{S_{ADE}}{S_{ABC}} = \left(\frac{\omega}{12}\right)^2 = \frac{105}{144}$$

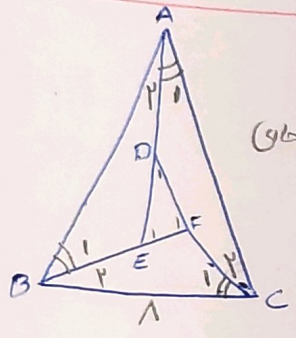


$\widehat{BDC} = 2 \widehat{BDM}$

$\widehat{D_1} = \widehat{D_2}$   
IMD  
مستقیم  
 $\widehat{M_1} = \widehat{M_2} = 90^\circ$

$$\Delta DMB \cong \Delta DMN \Rightarrow \frac{nm}{Dn} = \omega$$

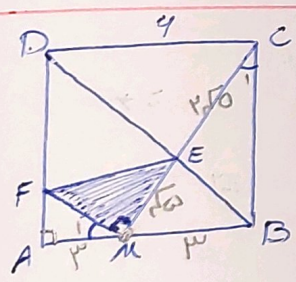
$$\Rightarrow \text{در } m \text{ و } n \text{ با هم } \Rightarrow \text{نسبتی } \Rightarrow 9 - \omega = \frac{12}{\omega} \Rightarrow \omega = 3$$



$\widehat{ABF} = \widehat{CAE} = \widehat{BCD}$ ,  $EF = 3$ ,  $DF = 1.5$ ,  $AB = ?$

$$\widehat{D_1} = \widehat{A_1} + \widehat{C_1} \Rightarrow \widehat{D_1} = \widehat{C} \Rightarrow \widehat{F_1} = \widehat{B} \Rightarrow \widehat{E} = \widehat{A} \Rightarrow \Delta DEF \sim \Delta CBA$$

$$\rightarrow \left(\frac{EF}{BA}\right) \left(\frac{FD}{CB}\right) = \frac{EP}{CA} \Rightarrow \frac{3}{BA} = \frac{1.5}{1} \Rightarrow BA = \frac{24}{10} = 2.4$$



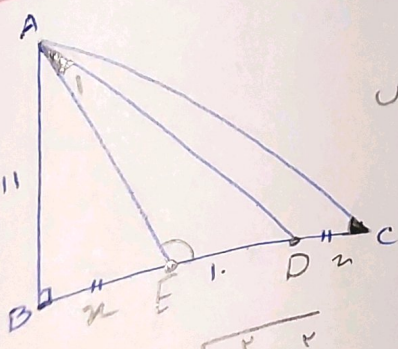
M: AB وسطا,  $\widehat{BCE} = \widehat{AMF}$ ,  $\Delta BCE \sim \Delta AMF$

$$MC = 3\sqrt{2} \rightarrow \Delta CE \sim \Delta MEB \rightarrow \frac{ME}{EC} = k = \frac{1}{2} \Rightarrow ME = \sqrt{2}, EC = 2\sqrt{2}$$

$$\widehat{M} = \widehat{C_1} \Rightarrow \Delta FAM \sim \Delta BMC \rightarrow \frac{MF}{MC} = k' = \frac{1}{2} \rightarrow FM = \frac{3\sqrt{2}}{2}$$

$$\Rightarrow S_{FME} = FM \times ME \times \frac{1}{2} = \frac{3\sqrt{2}}{2} \times \sqrt{2} \times \frac{1}{2} = \frac{15}{2} = 7.5$$

$\widehat{DAE} = \widehat{ACD}$ ,  $BE = DC$ ,  $DC = ? = n = 3 \sqrt{10}$



$$\widehat{E} = \widehat{C} \Rightarrow \Delta AED \sim \Delta ACE \rightarrow \left(\frac{DE}{EA}\right) \left(\frac{EA}{EC}\right) = \frac{DA}{AC}$$

$$\Rightarrow \frac{10}{\sqrt{11^2 + n^2}} = \frac{n+10}{n+10} \Rightarrow 11^2 + n^2 = 10n + 100$$

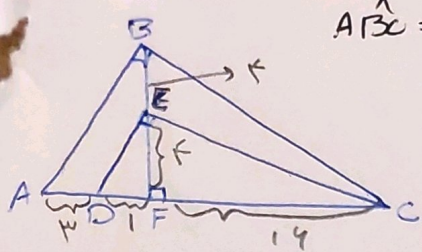
$$\Rightarrow n^2 - 10n + 11 = 0 \rightarrow (n-3)(n-7) = 0 \rightarrow n = 3 \sqrt{10}$$

$$\hat{AFC} = \hat{CED} = 90^\circ \quad AD=3 \text{ و } EF=4 \text{ و } DF=1 \text{ و } BC=?$$

$$CF \times PF = (FE)^2 \rightarrow FC = 14$$

$$AF \times CF = (FB)^2 \rightarrow FB = 8 \Rightarrow BE = 6$$

$$\text{فیناغوی } \triangle FCB \rightarrow \sqrt{8^2 + 14^2} = 16 \text{ (جواب)}$$

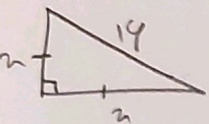


اندازه میان خط  
مماسی = ؟

لنف قاعده = اندازه میان دو دایره  
مماسه

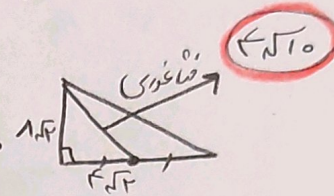
اندازه قاعده = 14  
مماسی المماس

مثلث قائم الزامی است



$$n^2 = 14^2 \rightarrow n = \frac{14\sqrt{2}}{2} = 7\sqrt{2}$$

صیانه وار  
مماسی

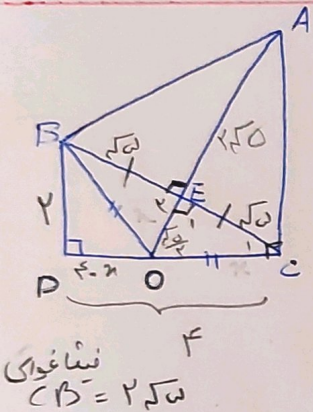


$$BD=2, CD=4, \hat{ACD}=90^\circ \quad S_{\triangle ABE}=?$$

$$\left. \begin{array}{l} \overline{CO} = \overline{BO} \\ \hat{E}_1 = \hat{E}_2 = 90^\circ \\ OE \text{ مشترک} \end{array} \right\} \rightarrow \triangle OEB \cong \triangle OEC \Rightarrow CE = BE = \sqrt{5}$$

$$\left. \begin{array}{l} \hat{E}_1 = \hat{D} = 90^\circ \\ \hat{C} \text{ مشترک} \end{array} \right\} \rightarrow \triangle OEC \sim \triangle ODB \Rightarrow OE = \frac{\sqrt{5}}{2}$$

$$CE^2 = OE \cdot AE \rightarrow 5 = \frac{\sqrt{5}}{2} \times EA \rightarrow EA = 2\sqrt{5} \Rightarrow S_{\triangle ABE} = \frac{\sqrt{5} \times 2\sqrt{5}}{2} = 5 \text{ (جواب)}$$

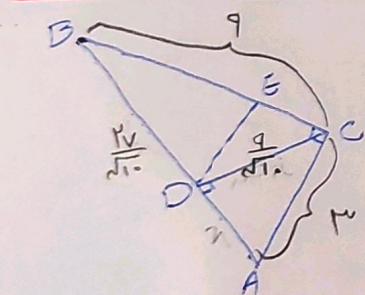


$$AC=3, BC=9, DE \perp BC, \hat{C}=90^\circ, BE=?$$

$$\text{فیناغوی } AB = 3\sqrt{10} \rightarrow 3\sqrt{10} \times DC = 3 \times 9 \rightarrow DC = \frac{9}{\sqrt{10}}$$

$$\text{ی دالیم } CE \times CB = (DC)^2 \rightarrow CE \times 9 = \frac{81}{10} \rightarrow CE = 0.9$$

$$\Rightarrow BE = 1.1 \text{ (جواب)}$$



$$AB=12, BC=12, \hat{ABC}=90^\circ, DE=?$$

$$\left. \begin{array}{l} \hat{A} = \hat{D} = 90^\circ \\ \hat{P} = \hat{B} \end{array} \right\} \rightarrow \triangle PEA \sim \triangle ABC \rightarrow \frac{AD}{PE} = \frac{4}{3}$$

$$\text{فیناغوی } \triangle AB \rightarrow \hat{A} = 45^\circ \Rightarrow 20 \times BH = 12 \times 12 \rightarrow 9.6 = BH$$

$$\text{فیناغوی } \triangle BHA \rightarrow HA = 12.8 \Rightarrow AE = 9.6$$

$$3n = 9.6 \rightarrow n = 3.2 \Rightarrow DE = 3n = 9.6 \text{ (جواب)}$$

