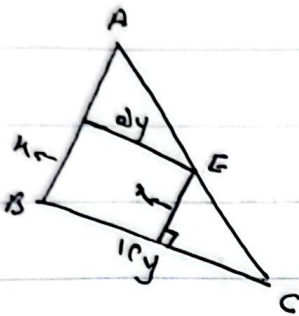


مسئله ۲۰

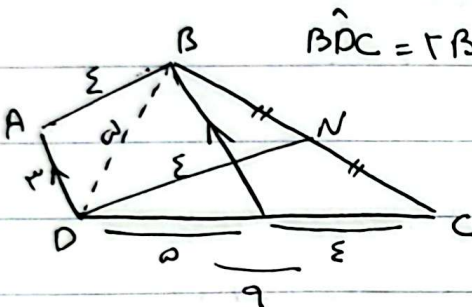
۲۰

اصطلاحات



$$\frac{S_{BCE}}{S_{BDE}} = \frac{1}{2}$$

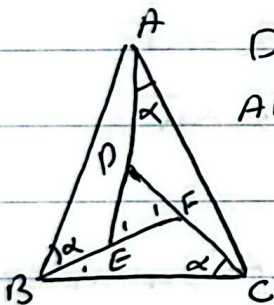
۵



$$BDC = BDM$$

$$\frac{1}{4} = \frac{n}{E} \rightarrow n = 1$$

۵



$$DF = FD \quad EF = F$$

$$ABE = CAE = BCD$$

$$\frac{1}{4} = \frac{AB}{F} \rightarrow AB = 4$$

$$F = \alpha + \beta = \beta$$

$$E_1 = A_1 + \alpha = A$$

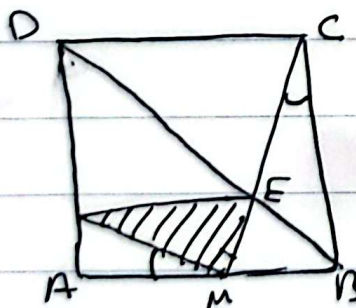
$$F_1 = \beta$$

$$E_1 = A$$

$$ABC \sim DEF$$

$$\frac{BC}{DF} = \frac{AB}{EF}$$

۵



$$BCE = AMF$$

$$CD \parallel MB \rightarrow CDE \sim EMB$$

$$\frac{CE}{ME} = \frac{CD}{MB} \rightarrow \frac{CE}{ME} = \frac{4}{1} = 4 \rightarrow CE = 4ME$$

$$CM = CE + ME = 5ME$$

$$CM^2 = CB^2 + BM^2 \rightarrow 25ME^2 = 4 + 1 = 5 \rightarrow ME = 1$$

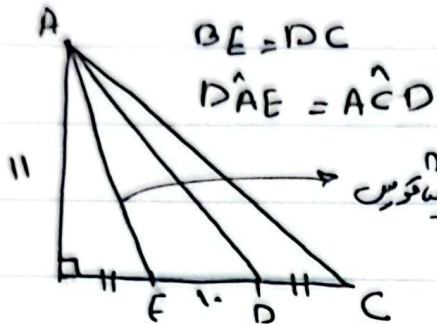
$$S_{EFM} = \frac{1}{2} MF \times ME = \frac{1}{2} \times \frac{1}{5} \sqrt{5} \times 1 = \frac{1}{10} \sqrt{5}$$

$$\frac{1}{2} = \frac{1}{5} \sqrt{5}$$

DAT

۲۲

الجزء الثاني



$$BE = DC$$

$$\angle ADE = \angle ACD$$

$$\triangle ADE \sim \triangle ACD$$

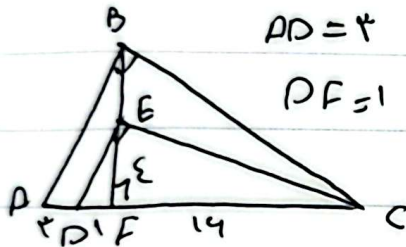
$$\frac{AD}{AE} = \frac{AC}{CD}$$

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

$$n^2 + 100 = 11 \cdot (10 + n)$$

$$n^2 - 11n + 100 = 0 \rightarrow n = 10 \text{ or } n = 7$$

5



$$AD = 4$$

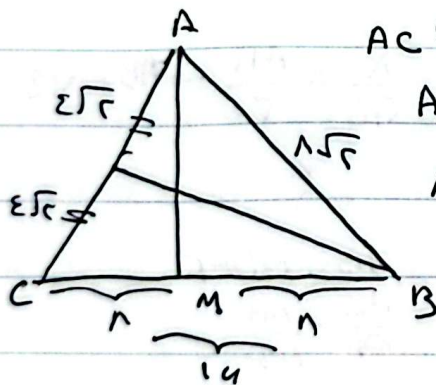
$$EF = 1$$

$$DF = 1$$

$$EF^2 = DF \cdot FC \rightarrow 14 = 1 \cdot FC$$

$$BC^2 = 14 \cdot 14 \rightarrow BC = 14$$

6



$$AC^2 = CM^2 + AM^2 \rightarrow AC = \sqrt{14^2 + 1^2} = 14.1$$

$$AB^2 = MB^2 + AM^2 \rightarrow AB = 14.1$$

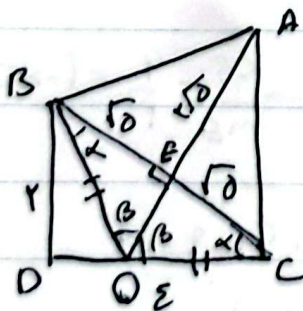
$$AM = \frac{14}{2} = 7$$

$$AB^2 + BC^2 = 2(BM^2 + AM^2) \rightarrow 14^2 + 14^2 = 2(BM^2 + 7^2)$$

$$14^2 = 2BM^2 + 49 \rightarrow 2BM^2 = 14^2 - 49 = 147$$

$$BM^2 = \frac{147}{2} \rightarrow BM = 8.5$$

7

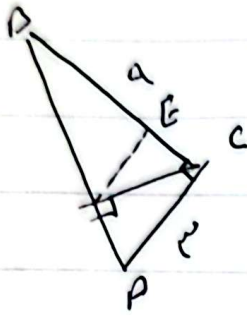


$$\tan \alpha = \frac{1}{2}$$

$$SABH = 1$$

8

DAT



$$BA \text{ منسوب } 3\sqrt{10}$$

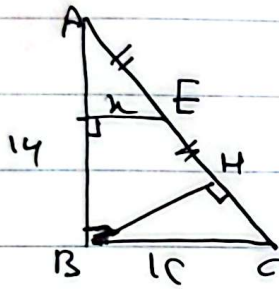
$$DC = \frac{3 \times 9}{3\sqrt{10}} = \frac{9}{\sqrt{10}}$$

$$\left(\frac{9}{\sqrt{10}}\right)^2 = CE \times 9 \rightarrow CE = \frac{9}{10}$$

$$BE = 1.1$$

9

5



$$BH = \frac{10 \times 14}{10} = \frac{14}{1}$$

$$10^2 = HC \times 10 \rightarrow HC = \frac{10}{1}$$

$$\frac{x}{\frac{14}{1}} = \frac{10}{10} \rightarrow x = 1.4$$

10

5

اصحاب دانش