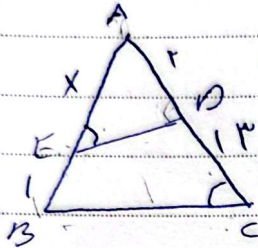


سوال ۱: $\triangle BEF \sim \triangle AFE \rightarrow \frac{BF}{FE} = \frac{BE}{AE} = \frac{FC}{AF}$
 $BF = 3k$ $FC = 4k$

$\triangle BAE \rightarrow BE^2 = AE^2 + AB^2$ $BE^2 = 9m^2 + n^2$
 $\triangle CAE \rightarrow CE^2 = AE^2 + AC^2$ $CE^2 = 9m^2 + 9n^2 = 9(m^2 + n^2) = 9BE^2$
 $BE = \sqrt{10}m$ $CE = 3\sqrt{10}m$ $k = \frac{\sqrt{10}}{3}m$



$\angle EDC = \angle ACB$

$\angle E = \angle C$
 $\angle A = \angle A$

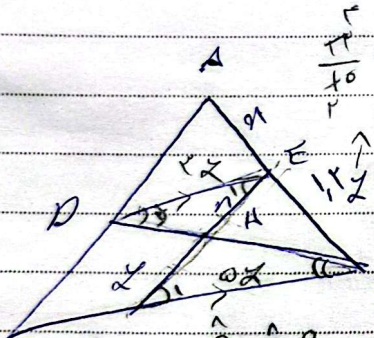
$\triangle EDC \sim \triangle ACB$

$\frac{AE}{AC} = \frac{AD}{AB} = \frac{ED}{CB}$

$m^2 + n = 30 \rightarrow m^2 + n - 30 = 0$

$(m+4)(m-4) = 0$

$m = -4$ $m = 4$
 غلط صحیح



$\frac{10}{10} \times \frac{10}{10} = 10$

$DE \parallel BC$

$DE = \omega n = \frac{1}{2}n$

$BE = 3$

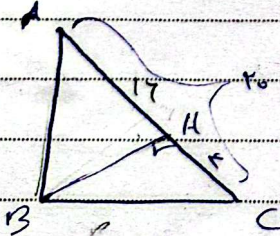
$BC = 3 + \omega \times \frac{10}{10} = 7$

سوال ۳: $\frac{DE}{BE} = \frac{AE}{AC} = \frac{AD}{AB} = \frac{1}{2}$

$\angle D = \angle C$
 $\angle E = \angle F$

$\triangle HAC \sim \triangle EHD$

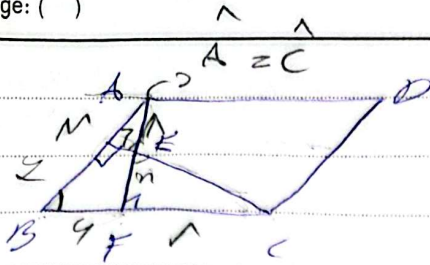
$\frac{EH}{EH} = \frac{HC}{HD} = \frac{EC}{DE} = \frac{\omega}{2}$



$AB^2 = AH \times AC \rightarrow AB^2 = 14 \times 20$

$BC^2 = CH \times AC \rightarrow BC^2 = 8 \times 20$

سوال ۴: $\frac{AB^2}{BC^2} = \frac{14 \times 20}{8 \times 20} = \frac{AB}{BC} = 2$



$$AD = 1^{\circ} = BC$$

$$BF = 4$$

$$AE = 1$$

$$\triangle AFB \sim \triangle CFE$$

$$AF = ? \rightarrow AE = 1, \angle = 1^{\circ}$$

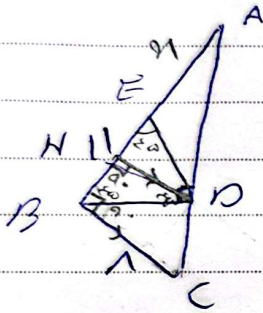
$$\frac{AF}{CF} = \frac{AB}{CE} = \frac{FB}{FE} \rightarrow \frac{1}{1+n} = \frac{n}{1} \rightarrow 1+n+n^2 = 1$$

$$\frac{1}{1+n} = \frac{n}{1} \rightarrow 1+n+n^2 = 1$$

$$n^2 + 1n - 1 = 0$$

$$(n+1)(n-1) = 0$$

$$n = 1$$



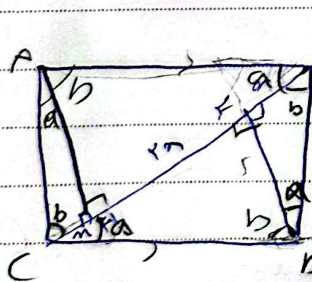
BD is

$$DH \parallel BC \rightarrow \angle B = 90^{\circ}$$

$$AE? \quad BH = \omega, \omega \quad HE = \omega$$

$$\frac{AH}{AB} = \frac{DH}{BC} = \frac{AD}{AC} \rightarrow \frac{n+\omega/\omega}{n+1} = \frac{\omega/\omega}{1}$$

$$\omega, \omega n + 1, \omega = 1n + 1 \rightarrow 1, \omega \rightarrow n = 1, 1$$



$$BD^2 = n^2 + 4n^2 \rightarrow BD = 2n$$

$$\triangle AEC \sim \triangle DFB \rightarrow FD = 2H$$

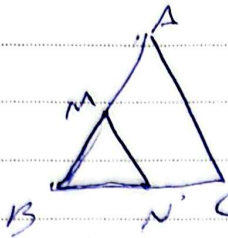
$$\tan \theta = \frac{n}{FD} = \frac{FD}{2n} \rightarrow FD^2 = 2n^2 \rightarrow FD = \sqrt{2}n$$

$$CD^2 = 4n^2 + 2n^2 = 6n^2 \rightarrow CD = \sqrt{6}n$$

$$\frac{S_{ABCD}}{S_{DBF}} = \frac{1n \times \sqrt{6}n}{\frac{1}{2} \times \sqrt{2}n \times n} = \frac{\sqrt{6}n^2}{\frac{\sqrt{2}}{2}n^2} = \frac{1}{1}$$

Arman

$$\frac{3}{4} NC = BN \quad BC = \frac{3}{4} NC + \frac{3}{4} NC = \frac{3}{2} NC \quad \text{Page: ()}$$



$$BN = NC \quad \frac{BM}{AM} = ?$$

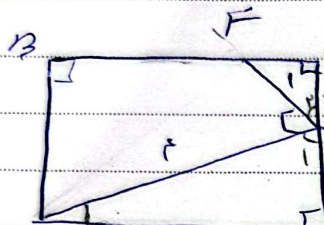
$$S_{ABC} = 4 S_{BMN}$$

$$\frac{\frac{1}{2} \times BN \times BM \times \sin B}{\frac{1}{2} \times BC \times AB \times \sin B} = \frac{1}{4}$$

$$BC \times AB = 4 BN \times BM$$

$$\frac{3}{2} NC \times AB = 4 \times \frac{3}{4} NC \times BM \rightarrow AB = 4 BM$$

$$\frac{BM}{AB} = \frac{1}{4} \rightarrow \frac{BM}{AM} = \frac{1}{3}$$



$$\begin{aligned} M_1 + M_2 &= 90 \\ M_1 + C &= 90 \end{aligned} \quad \left. \begin{aligned} M_1 + M_2 &= 90 \\ M_1 + C &= 90 \end{aligned} \right\} M_2 = C$$

$$M_1 DC \sim F \hat{A} M \rightarrow \frac{MD}{FA} = \frac{MC}{MF} = \frac{DE}{AM} = \frac{1}{2}$$

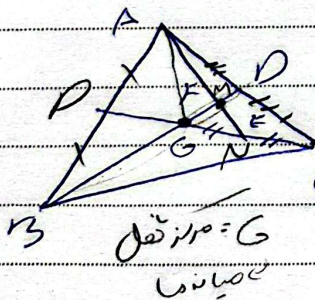
$$\begin{aligned} f_2 &= m + f \\ m &= n \end{aligned}$$

$$14 \times f + 9 \times f = 14 \rightarrow 23f = 14$$

$$m = f \rightarrow f = \frac{14}{23}$$

$$(f_2)^2 = \left(\frac{14}{23}\right)^2 = \frac{196}{529} = 10.12$$

$$\rightarrow m = \frac{14}{23}$$



$$GE = EC$$

$$AN \parallel GD \rightarrow \frac{AN}{GD} = \frac{1}{2}$$

$$\frac{BD}{FD} = \frac{AG}{GC} \rightarrow \frac{BD}{FD} = \frac{1}{2}$$

$$\rightarrow FD = 2 \quad GF = 1 \rightarrow GD = 3$$

$$GD = \frac{1}{3} BD \rightarrow BD = 9$$

$$\frac{BD}{FD} = \frac{9}{3} = 3$$