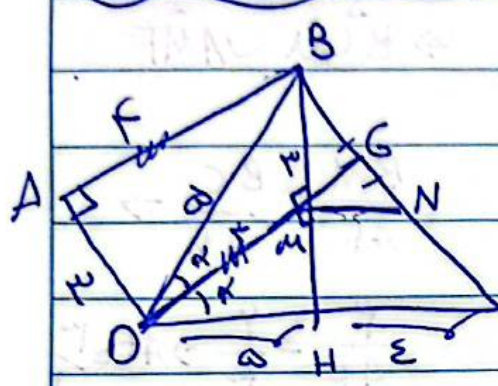


Subject:

Date: / /

$$\frac{S_{BCE}}{S_{BDE}} = \frac{BC}{DE} \quad \frac{AO}{AB} = \frac{DE}{BC} \Rightarrow \frac{\alpha}{14} = \frac{DE}{BC} \Rightarrow \frac{BC}{DE} = \frac{14}{\alpha} \quad (1)$$



ABMD مستطیل $\Rightarrow AD = BM$
 $AB = DM$

$\hat{M}_1 = \hat{M}_2 = 90^\circ$
 $\hat{D}_1 = \hat{D}_2 = \alpha$
 $DM = DM$

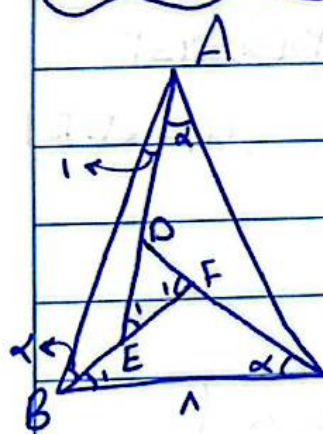
$\Rightarrow \triangle H M \cong \triangle M B$

$HM = MB$
 $OH = OM$

$HC = DC - DH \rightarrow 9 - \alpha = \epsilon$

$\frac{BM}{MH} = \frac{BH'}{HC} \rightarrow MH' \parallel HC \rightarrow \frac{BM}{BH} = \frac{MH'}{HC}$

$MH' = \gamma$
 $\frac{1}{\gamma} = \frac{MH'}{\epsilon}$



$\hat{F}_1 = \alpha + \hat{B}_1 = \hat{B}_{(1)}$
 $\hat{E}_1 = \hat{A}_1 + \alpha = \hat{A}_{(x)}$

$\xrightarrow{(1)} \hat{F}_1 = \hat{B}$
 $\xrightarrow{(2)} \hat{E}_1 = \hat{A}$

$\therefore \triangle ABC \sim \triangle DEF \Rightarrow \frac{BC}{DF} = \frac{AB}{EF}$

$DE = \gamma \alpha, EF = \gamma \Rightarrow \frac{1}{\gamma \alpha} = \frac{AB}{\gamma}$

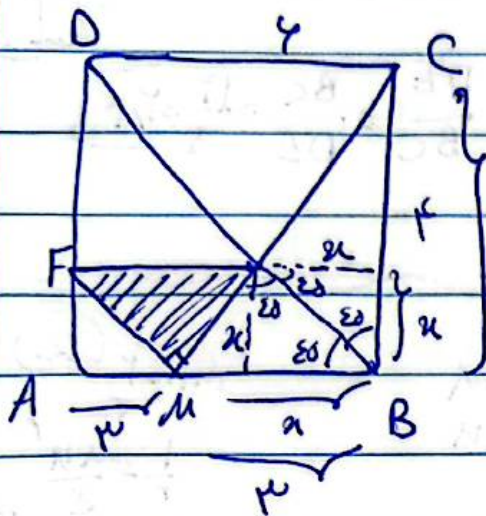
$AB = 9, \gamma$

YASHA

Subject:

Date: / /

(P)



$$\begin{cases} \angle BCM = \angle AMF \\ \angle A = \angle B = 90^\circ \end{cases} \Rightarrow \triangle BCM \sim \triangle AMF$$

$$\frac{BM}{AF} = \frac{BC}{AM} \Rightarrow$$

$$\frac{r}{AF} = \frac{r}{r} \Rightarrow AF = \frac{r}{2}$$

$$MF^2 = AM^2 + AF^2 \Rightarrow MF^2 = \left(\frac{r}{2}\right)^2 + \left(\frac{r}{2}\right)^2 \Rightarrow MF = \frac{r}{\sqrt{2}} \Rightarrow MF = \frac{r\sqrt{2}}{2}$$

$$EK \parallel MB \Rightarrow \frac{CK}{BC} = \frac{EK}{MB} \Rightarrow \frac{r-n}{r} = \frac{n}{r} \Rightarrow r-n = n \Rightarrow n = \frac{r}{2}$$

$$MH = r - \frac{r}{2} = \frac{r}{2}$$

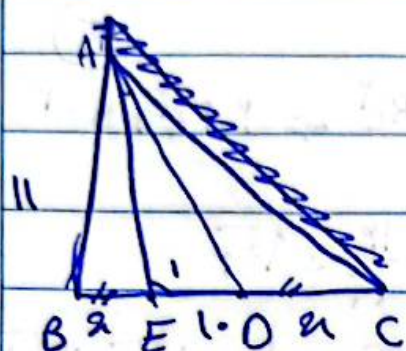
$$ME^2 = EH^2 + MH^2 = \left(\frac{r}{2}\right)^2 + \left(\frac{r}{2}\right)^2 \Rightarrow ME = \frac{r}{\sqrt{2}} \Rightarrow ME = \frac{r\sqrt{2}}{2}$$

$$S_{\triangle EFM} = \frac{1}{2} \times MF \times ME = \frac{1}{2} \times \frac{r\sqrt{2}}{2} \times \frac{r\sqrt{2}}{2} \Rightarrow \frac{1}{2} \times \frac{r^2}{2} = \frac{r^2}{4}$$

YASHA

Subject:

Date: / /



$$\left\{ \begin{array}{l} \angle ADE = \angle AEC \\ \angle E_1 = \angle E_1 \end{array} \right\} \Rightarrow \triangle ADE \sim \triangle AEC \quad (a)$$

$$\frac{AD}{AC} = \frac{AE}{CE} = \frac{ED}{AE}$$

$$BE = DE = x$$

$$\frac{AE}{CE} = \frac{ED}{AE} \Rightarrow AE^2 = ED \times CE = 1 \cdot (1+x) = 1+x$$

$$AE^2 = 1+x \quad (1)$$

$$AE^2 = AB^2 + BE^2 \Rightarrow AE^2 = 1^2 + x^2 \xrightarrow{(1)} 1+x = 1+x^2$$

$$x^2 - 1 = 0$$

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

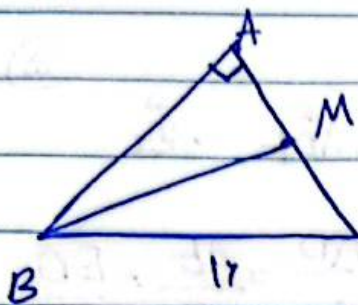
$$\left\{ \begin{array}{l} x=1 \\ x=-1 \end{array} \right. \Rightarrow \boxed{0 < x}$$

$$EF^2 = DF \times FC \Rightarrow x^2 = 1 \times FC \Rightarrow FC = x^2 \quad (6)$$

$$BC^2 = CF \times CA = x^2 \times (1+x) = x^2 \times 1 \Rightarrow BC = x\sqrt{1+x} = \sqrt{1+x}$$

Subject:

Date: / /



$$AB = AC, AB^2 + AC^2 = BC^2 \Rightarrow 2AC^2 = BC^2 \quad (7)$$

$$AC \sqrt{2} = BC = 17 \Rightarrow AC = \frac{17}{\sqrt{2}} = 17\sqrt{2}$$

$$\hookrightarrow AB = 17\sqrt{2}, AM = \frac{1}{2}AC = \frac{1}{2} \times 17\sqrt{2} = 17\sqrt{2}$$

$$BM^2 = AB^2 + AM^2 \Rightarrow AM^2 = (17\sqrt{2})^2 + (17\sqrt{2})^2 = 2 \times 17 \times 17 = 17^2$$

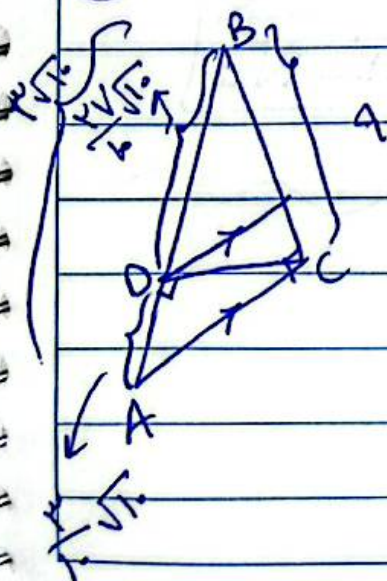
$$BM = 17$$

$$AE = 2BE \quad DC = 2BD \quad (8)$$

$$BC^2 = BD^2 + CD^2 = 4 + 16 = 20 \Rightarrow BC = 2\sqrt{5} \rightarrow BE = \frac{BC}{2} = \sqrt{5}$$

$$AE = 2\sqrt{5}$$

$$S_{ABE} = \frac{1}{2} BE \times AE = \frac{1}{2} \times \sqrt{5} \times 2\sqrt{5} = 5$$



$$9 = AD \times \frac{1}{2} \sqrt{10} \Rightarrow AD = \frac{9}{\frac{1}{2} \sqrt{10}} = \frac{18}{\sqrt{10}} = \frac{18\sqrt{10}}{10} = \frac{9\sqrt{10}}{5}$$

$$\frac{BE}{9} = \frac{\frac{1}{2} \sqrt{10}}{\frac{9\sqrt{10}}{5}} \Rightarrow \frac{BE}{9} = \frac{1}{2} \times \frac{5}{9} \Rightarrow BE = \frac{5}{2} = 2.5$$

$$BE = 1.1$$

YASHA

Date: / /

A geometric diagram illustrating the properties of medians and altitudes in a triangle. Triangle \$ABC\$ has vertex \$A\$ at the top, \$B\$ at the bottom left, and \$C\$ at the bottom right. \$AD\$ is the altitude from \$A\$ to side \$BC\$, meeting \$BC\$ at \$D\$. \$BE\$ is the median from \$B\$ to side \$AC\$, meeting \$AC\$ at \$E\$. The two lines intersect at point \$H\$. The following segment lengths are labeled: \$AH = 4\$, \$HD = 2\$, \$BH = 6\$, \$HE = 2\$, \$HC = 8\$, and \$EC = 4\$. Right angle symbols are indicated at points \$D\$ and \$H\$.

$$(12)^{\text{r}} = \text{CH}_2 \Rightarrow \text{CH} = \text{V, r}$$

$$\frac{Y_1 \varepsilon}{Y_0} = \frac{DE}{12} \Rightarrow DE = 12 \Delta F$$