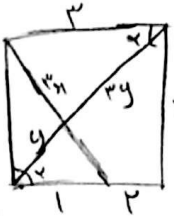


19

-1



$$BFC \sim AFE$$

$$AC = \sqrt{9+9} = 3\sqrt{2} = 4y \Rightarrow y = \frac{3\sqrt{2}}{4}$$

$$BE = \sqrt{9+1} = \sqrt{10} = 4x \Rightarrow x = \frac{\sqrt{10}}{4}$$

$$\frac{x}{y} = \frac{\frac{\sqrt{10}}{4}}{\frac{3\sqrt{2}}{4}} = \frac{\sqrt{10}}{3\sqrt{2}} = \frac{\sqrt{5}}{3}$$

(5)

-2

$$\left. \begin{array}{l} \hat{A} = \hat{A} = \hat{A} \\ \hat{E} = \hat{C} \end{array} \right\} \rightarrow AED \sim ABC \rightarrow \left\{ \begin{array}{l} \frac{AD}{AB} = \frac{AE}{AC} = \frac{ED}{BC} \\ \frac{y}{1+y} = \frac{x}{10} \end{array} \right. \rightarrow x^2 + x - 10 = 0$$

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

$$\frac{y}{1+y} = \frac{x}{10} \rightarrow x^2 + x - 10 = 0$$

$$(x+4)(x-5) = 0 \rightarrow x = 5 \text{ (valid)}$$

(5)

-3

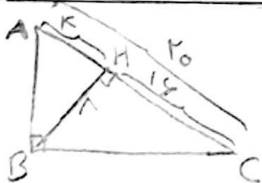
$$\left. \begin{array}{l} DE \parallel FC \rightarrow \hat{DEH} = \hat{HFC} \\ FE \parallel AC \rightarrow \hat{H} = \hat{H} \end{array} \right\} \rightarrow DHE \sim FHC \rightarrow \left\{ \begin{array}{l} \frac{DH}{HC} = \frac{EH}{HF} = \frac{DE}{FC} \end{array} \right. \rightarrow DE = \frac{4}{5} FC$$

$$DE \parallel BC \rightarrow \frac{AE}{AC} = \frac{DE}{BC} \rightarrow DE = \frac{1}{4} BC \Rightarrow \frac{1}{4} BC = \frac{4}{5} FC \rightarrow BC = \frac{16}{5} FC$$

$$BC = \frac{16}{5} FC \Rightarrow FC = \frac{10}{16} \rightarrow BC = \frac{10}{16} \times \frac{16}{5} = \frac{4}{5} = 0.8$$

$$BF + FC$$

-4

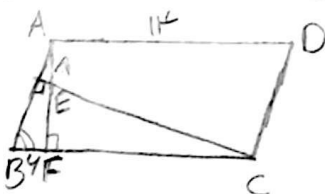


$$BH^2 = \frac{AH \times HC}{\frac{1}{19}} \rightarrow BH = 1 \Rightarrow AB = \sqrt{19+4} = \sqrt{23}$$

$$BC = \sqrt{4+14} = \sqrt{18} \Rightarrow \frac{AB}{BC} = \frac{\sqrt{23}}{\sqrt{18}} = \frac{1}{4} \leq \frac{BC}{AB} = 4$$

(5)

-5



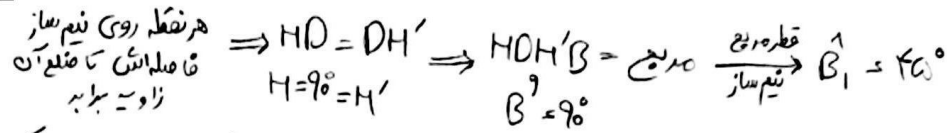
$$AD = 14 = BC \rightarrow FC = 14 - 4 = 10$$

$$\left. \begin{array}{l} \hat{B} = \hat{B} = \hat{B} \\ \hat{F} = \hat{F} = 90 \end{array} \right\} \rightarrow AFB \sim FEC \rightarrow \left\{ \begin{array}{l} \frac{FC}{AF} = \frac{EF}{BF} \Rightarrow \frac{10}{1+EF} = \frac{EF}{4} \end{array} \right. \Rightarrow$$

$$EF^2 + 1EF - 40 = 0$$

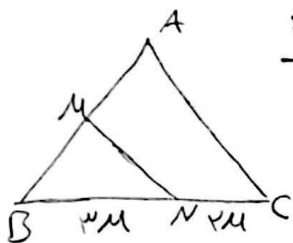
$$(EF+10)(EF-4) = 0 \rightarrow EF = 4 \rightarrow AF = 1+4 = 5$$

(5)



$$S = S_{ABC} \times r = \frac{\sqrt{3} \times 1 \times 1}{2} \times r = \frac{\sqrt{3}}{2} r$$

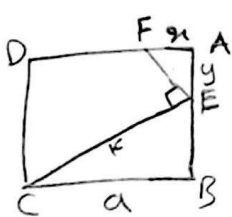
$$S_{HDA} = S_{BHC} = \frac{2 \times \sqrt{\mu} \eta}{r} = \frac{\sqrt{\mu}}{r} \eta r \quad \left\{ \rightarrow \frac{S_{HDA}}{S_{BHC}} = \frac{r \sqrt{\mu} \eta}{\frac{\sqrt{\mu}}{r} \eta r} = 1 \right.$$



$$\frac{S_{BMN}}{S_{ABC}} = \frac{BM \times BN}{BA \times BC} = \frac{BM \times \frac{1}{4} BC}{AB \times BC} = \frac{1}{4} \Rightarrow \frac{BM}{AB} = \frac{1}{4}$$

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

$$\frac{AB}{BM} = \frac{1}{\omega} \rightarrow \frac{AB - BM}{BM} = \frac{1}{\omega} \rightarrow \frac{BM}{AM} = \frac{\omega}{1}$$



$$\triangle AFE \sim \triangle EBC$$

$$\frac{a}{a-y} = \frac{y}{a-y} + \frac{1}{1-y} \Rightarrow \frac{y}{a-y} - \frac{y}{a-y} = a \Rightarrow a = \frac{1}{1-y} a \rightarrow \frac{1}{a-y} = \frac{1}{1-y} \Rightarrow (a-y) = 1-y$$

$$a^2 = \frac{(14)^2}{20} = 10,2 \text{ m}$$

FD = $\frac{1}{4} GD \rightarrow$ مرکز ثقل مثلث AC

$$D = \frac{1}{\mu} BD \rightarrow ABC \text{ مثلث } G \Rightarrow \frac{BD}{FD} = 9$$

