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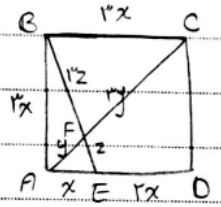
طاها یوصیان عضاء - یازدهم پسر A - تکلیف ۲۱

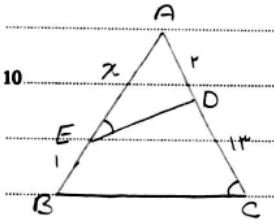


۱- $\triangle BCF \sim \triangle AFE \rightarrow \frac{BC}{AE} = \frac{FC}{FA} = \frac{BF}{FE}$

$\triangle BAE \rightarrow BA^2 + AE^2 = BE^2 \rightarrow (3x)^2 + (x)^2 = 10x^2 \Rightarrow \sqrt{10x^2} = 4z \Rightarrow z = \frac{\sqrt{10x^2}}{4}$

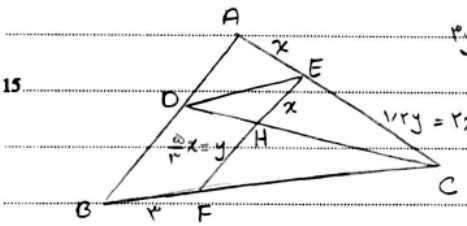
$\triangle ACD \rightarrow CD^2 + AD^2 = AC^2 \rightarrow (3x)^2 + (6x)^2 = 18x^2 \Rightarrow \sqrt{18x^2} = 4y \Rightarrow y = \frac{\sqrt{18x^2}}{4}$

$\frac{EF}{AF} = \frac{z}{y} = \frac{\frac{\sqrt{10x^2}}{4}}{\frac{\sqrt{18x^2}}{4}} = \sqrt{\frac{10x^2}{18x^2}} = \sqrt{\frac{5}{9}} = \frac{\sqrt{5}}{3}$



۲- $\frac{2}{1+x} = \frac{x}{2+12} \rightarrow x + x^2 = 20 \rightarrow x^2 + x - 20 = 0 \rightarrow (x+5)(x-4)$

$x = -5, 4$



۳- $4y = 5x \rightarrow y = \frac{5}{4}x \rightarrow \frac{4}{3} \times \frac{15}{4} = 5$

$\triangle ADE, \triangle ABC \rightarrow \frac{AE}{AC} = \frac{DE}{BC} = \frac{AD}{DB}$ (DE ∥ BC)

$4DE = BC \rightarrow 4DE = FC + 4$

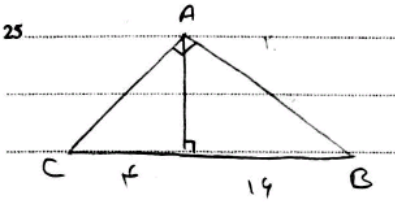
$\triangle DEH, \triangle HFC \rightarrow \frac{DE}{FC} = \frac{x}{y} = \frac{x}{\frac{5}{4}x} = \frac{4}{5}$ (DE ∥ FC)

$\Rightarrow FC = \frac{5}{4}DE$

$4DE = \frac{5}{4}DE + 4 \rightarrow DE = \frac{9}{5}$

$\frac{4}{4}DE = 4 \rightarrow 4 \times \frac{4}{4} = DE$

$4 \times \frac{9}{5} = \frac{27}{5}$



۴- $AB = BH \times BC$

$AC = CH \times BC$

$\frac{AB}{AC} = \frac{BH}{CH} = 5$

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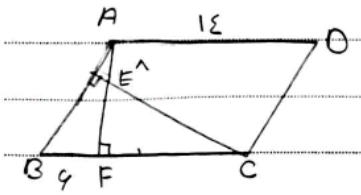


$\hat{AFB} \sim \hat{CFE} \rightarrow \frac{BF}{EF} = \frac{AF}{AE} \rightarrow \frac{۹}{EF} = \frac{۸+EF}{۸}$

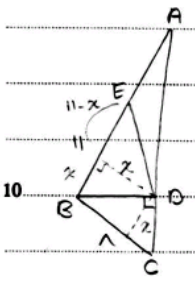
$۶۸ = ۸EF + EF^۲ \rightarrow EF^۲ + ۸EF - ۶۸ = ۰$

$(EF+۱۲)(EF-۶)$

$EF = -۱۲ , ۶$

$AF = EF + AE = ۶+۸ = ۱۴$

۶

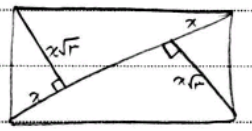


$x^۲ = x(۱۱-x) \rightarrow x^۲ = ۱۱x - x^۲ \rightarrow ۲x^۲ = ۱۱x \rightarrow ۲x = ۱۱ , x = ۵/۵$

$x = ۰$

$\hat{EBC} \rightarrow x \parallel BC , \Rightarrow \frac{۵/۵}{BC} = \frac{AE + ۵/۵}{۱۱ + AE} \rightarrow AE = ۹/۹$

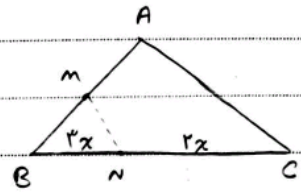
۷



$S_{\square} = \frac{(\frac{x\sqrt{۲} \times ۲x}{۲}) \times ۲ + \frac{x^۲\sqrt{۲} \times ۲}{۲}}{\frac{x^۲\sqrt{۲}}{۲}} = ۸$

$۲x^۲\sqrt{۲}$ $x^۲\sqrt{۲}$

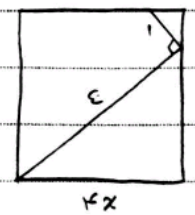
۸



$۵AM + ۵BM$

$\frac{\frac{۱}{۲} \times ۵ \times (AM+MB) \times \sin\hat{B}}{\frac{۱}{۲} \times ۲ \times BM \times \sin\hat{B}} \Rightarrow \frac{BM}{AM} = ۱/۲۵ = \frac{۵}{۴}$

۹



$(۳x)^۲ + (۴x)^۲ = ۱۹ \rightarrow ۹x^۲ + ۱۶x^۲ = ۱۹ \Rightarrow ۲۵x^۲ = ۱۹$

$x^۲ = \frac{۱۹}{۲۵} \Rightarrow x = \frac{۴}{۵}$

$۴x = ۴ \times \frac{۴}{۵} = \frac{۱۶}{۵} \rightarrow \frac{۱۶}{۵} \times \frac{۱۶}{۵} = \frac{۲۵۶}{۲۵} = ۱۰/۲۴$

KHAJOO TAHRIR

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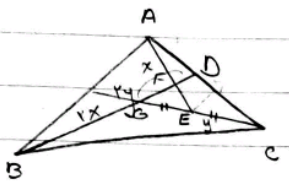

$GE = EC$

$\hat{AGC}$ → $GE = EC$ → AE میانه

$BD =$ میانه → $AD = DC$ ⇒ GD میانه

$F \rightarrow \hat{AGC} \Rightarrow \frac{GF}{FO} = \frac{2}{1} \rightarrow \frac{GF+FO}{FO} = \frac{3}{1} = \frac{GD}{FO}$

$G \rightarrow \hat{ABC} \Rightarrow \frac{BG}{GD} = \frac{2}{1} \rightarrow \frac{BG+GD}{GD} = \frac{3}{1} = \frac{BD}{GD} = 3$

$\underbrace{\frac{GF}{FO}}_{3} \times \underbrace{\frac{BD}{GF}}_{3} = \frac{BD}{FO} = 9$

Parsian