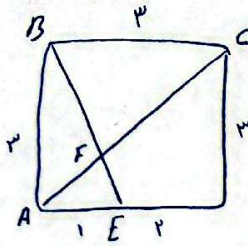


نام و نام خانوادگی ریاضیات (پایه) پاسخنامه تشریحی تکلیف شماره کلاس پایه دهم شماره ۱۳۹۸



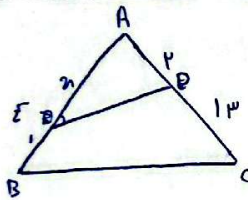
$$\left. \begin{array}{l} F_1 = F_2 \\ A = C \\ B = E \end{array} \right\} \triangle BFC \cong \triangle AFE$$

$$AC = 5\sqrt{2} \rightarrow AF = \frac{3\sqrt{2}}{2}$$

$$BE = \sqrt{10} \rightarrow EF = \frac{\sqrt{10}}{2}$$

$$\frac{EF}{AF} = \frac{\frac{\sqrt{10}}{2}}{\frac{3\sqrt{2}}{2}} = \boxed{\frac{\sqrt{5}}{3}}$$

۳



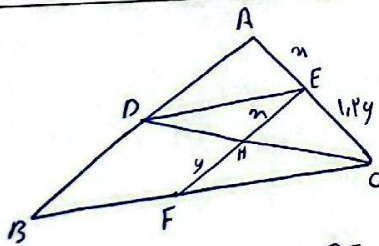
$$\left. \begin{array}{l} \hat{E} = \hat{C} \\ \hat{A} = \hat{A} \\ \hat{B} = \hat{D} \end{array} \right\} \triangle AED \cong \triangle ABC$$

$$\hookrightarrow \frac{AE}{AC} = \frac{AD}{AB} \rightarrow \frac{x}{14} = \frac{5}{13}$$

$$x^2 + x = 10 \rightarrow x^2 + x - 10 = 0 \rightarrow x = 2 \text{ or } x = -5$$

$$x = 2$$

۵



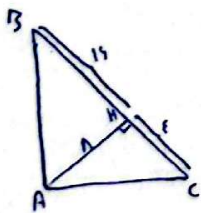
$$\frac{DE}{BC} = \frac{x}{x+4} = \frac{x}{x+\frac{10}{3}x} = \frac{1}{4}$$

$$\frac{DE}{FC} = \frac{x}{y} = \frac{1}{3}$$

$$BC = 3DE = \frac{12}{1} = \boxed{12}$$

$$\frac{DE}{BC} = \frac{DE}{\frac{12}{3}DE + 3} = \frac{1}{3} \rightarrow 3DE = \frac{12}{3}DE + 3 \rightarrow \frac{1}{3}DE = 3 \rightarrow DE = 9$$

۵



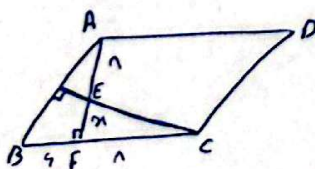
$$AH = \sqrt{14 \cdot 6} = 1$$

$$AC = \sqrt{10}$$

$$AB = \sqrt{14^2 + 1^2} = \sqrt{197}$$

$$\hookrightarrow \frac{AB}{AC} = \boxed{2}$$

۵



$$\triangle AFB \cong \triangle CFE$$

$$\frac{4}{1+x} = \frac{x}{1}$$

$$\rightarrow 4 = x + 1$$

$$x^2 + 14x - 14 = 0$$

$$(x+14)(x-1) = 0$$

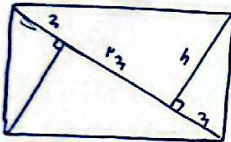
$$\downarrow \quad \downarrow$$

$$AF = \boxed{12}$$

۵

$$EH = BH = \frac{11}{r} = y$$

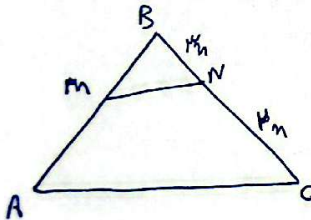
$$\frac{2 + \Delta \Delta}{11 + u} = \frac{\Delta \Delta}{\Delta} \rightarrow u = \frac{33}{\Delta}$$



$$\text{مساحت مثلث} = \frac{1}{2} \times \frac{xh}{r} = \frac{xh}{r}$$

$$\text{مساحت مثلث} = \frac{f \times h}{r} \times r = f \times h$$

$$\frac{f \times h}{\frac{xh}{r}} = \Delta$$

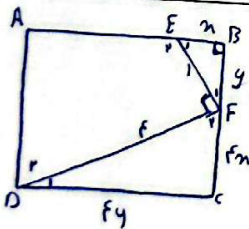


$$S_{MBN} = \frac{1}{r} \sin B \times BN \times BM$$

$$S_{ABC} = \frac{1}{r} \sin B \times AB \times BC$$

$$\frac{BM}{AM} = \frac{r}{r}$$

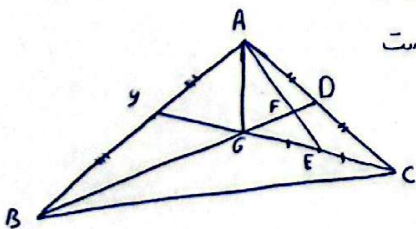
$$\frac{S_{ABC}}{S_{MBN}} = r = \frac{AB \times BC}{BN \times BM} = \frac{AB}{MB} \times \frac{r}{r} = r \rightarrow \frac{AB}{MB} = \frac{r}{r}$$



$$\left. \begin{array}{l} F_1 + F_r = 90 \\ F_1 + E_1 = 90 \end{array} \right\} F_r = E_1$$

$$\left. \begin{array}{l} F_r = E_1 \\ F_1 = D_1 \end{array} \right\} \Delta FBE \cong \Delta DCF \rightarrow \frac{EF}{FD} = \frac{EB}{FC} = \frac{1}{r} = \frac{BF}{DC}$$

$$fy = fn + y \rightarrow n = \frac{r}{f} y \rightarrow \frac{9}{14} y^2 + y^2 = 1 \rightarrow y = \frac{f}{8} \rightarrow fy = \frac{14}{8} \rightarrow \left(\frac{14}{8}\right)^2 = \frac{49}{16}$$



اگر میانه های مثلث یکدیگر را قطع کنند، خط نزدیک قاعده $\frac{1}{r}$ برابر خط دور از قاعده است

$$\left. \begin{array}{l} \text{AGC مثلث} \\ \text{میانخط AE} \\ \text{میانخط GD} \end{array} \right\} \begin{array}{l} GF = 2FD \\ FD = \frac{1}{3} GD \end{array}$$

$$\frac{BD}{FD} = \frac{2GD}{\frac{1}{3}GD} = 4$$

$$\left. \begin{array}{l} \text{ABC مثلث} \\ \text{میانخط cy} \\ \text{میانخط BD} \end{array} \right\} BG = 2GD$$

$$BG = 2y, GD = y \rightarrow BD = 3y$$

$$\left. \begin{array}{l} GF = \frac{2}{3}y \\ FD = \frac{1}{3}y \end{array} \right\} \rightarrow \frac{BD}{FD} = \frac{3y}{\frac{1}{3}y} = 9$$