نام و نام خانوادگی ...فرناز الماسی... پاسخنامه تشریحی تکلیف شماره ...۲۱... کلاس یازدهم تجربی B

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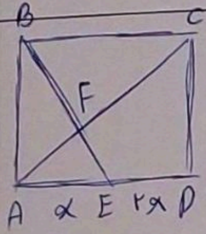

$\longrightarrow \dfrac{BE}{AC} = \dfrac{EF}{AF} \longrightarrow BE = \sqrt{(3x)^2 + (x^2)} = x\sqrt{10}$

$AC = \sqrt{(3x)^2 + (3x)^2} = 3x\sqrt{2}$

$\dfrac{EF}{AF} = \dfrac{x\sqrt{10}}{3x\sqrt{2}} \Rightarrow \dfrac{\sqrt{10}}{3\sqrt{2}} = \boxed{\dfrac{\sqrt{5}}{3}}$

(۲)

۲

$\dfrac{AD}{AB} = \dfrac{AE}{AC} \longrightarrow \dfrac{2}{x+1} = \dfrac{x}{15} \qquad x^2 + x - 30 = 0 \qquad (x+6)(x-5)$

$x = -6$ ✗

$\boxed{x = 5}$ ✓

(۲)

۳

$3y = 5x \longrightarrow \dfrac{x}{y} = \dfrac{3}{5}$

$\dfrac{EH}{FH} = \dfrac{x}{y} = \dfrac{3}{5} \longrightarrow \dfrac{DE}{FC} = \dfrac{3}{5}$

$\dfrac{AE}{AC} = \dfrac{x}{x + \underbrace{1{,}2y}_{1{,}2 \times \frac{5}{3}x}} \Rightarrow \dfrac{1}{3} \longrightarrow \dfrac{DE}{BC} = \dfrac{1}{3} \quad \overset{\times 3}{\left(\dfrac{3}{9}\right)}$

$\Bigg\}\ BF = 9z - 5z = 4z \longrightarrow 4z = 3 \quad z = \dfrac{3}{4}$

$BC = 9z \qquad 9 \times \dfrac{3}{4} = \boxed{\dfrac{27}{4} = 6{,}75}$

(۲)

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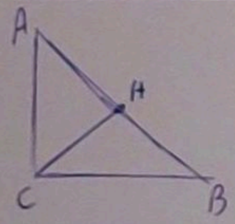


$\left.\begin{array}{l} AB = 20 \\ AH = 4 \end{array}\right\} BH = 20 - 4 = 16$

نسبت اضلاع تشابه $\longrightarrow AC^2 = AH \times AB \qquad 4 \times 20 = 80 \qquad AC = \sqrt{80} = 4\sqrt{5}$

$BC^2 = BH \times AB \qquad 16 \times 20 = 320 \qquad BC = \sqrt{320} = 8\sqrt{5}$

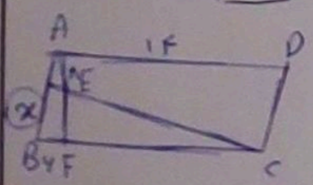
$\dfrac{AC}{BC} = \dfrac{4\sqrt{5}}{8\sqrt{5}} = \boxed{\dfrac{1}{2}}$

(۲)

۵

$BAF \cong ECF \qquad \dfrac{BF}{EF} = \dfrac{AF}{CF} \qquad \dfrac{6}{x} = \dfrac{8+x}{8} \qquad x(x+8) = 48 \qquad x = 4$

$AF = 8 + 4 = \boxed{12}$



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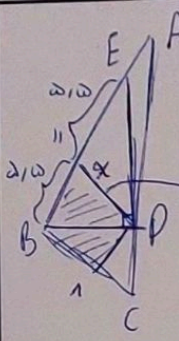


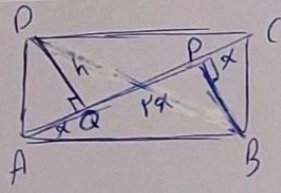
$\sqrt{۵٫۵ \times ۵٫۵} = ۵٫۵$

$\frac{AE + \frac{EB}{۲}}{AE + EB} = \frac{x}{BC} \rightarrow \frac{AE + ۵٫۵}{AE + ۱۱} = \frac{۵٫۵}{۸}$

$۱۴AE - ۱۱AE = ۱۲۱ - ۸۸$

$۳AE = ۳۳ \quad AE = \frac{۳۳}{۳}$

۶



$h^۲ = ۳x \times x = x\sqrt{۳}$

$S_{\text{متوازی}} = ۲ \times S_{ABC} \rightarrow ۲ \times \frac{۱}{۲} \times h \times ۴x = ۴x^۲\sqrt{۳}$ ($h = x\sqrt{۳}$)

$\frac{S_{\text{مثلث کوچک}}}{S_{APQ}} = \frac{۱}{۲} \times h \times x = \frac{x^۲\sqrt{۳}}{۲}$ ($h = x\sqrt{۳}$)

$\frac{S_{\text{متوازی}}}{S_{\text{مثلث}}} = \frac{۴x^۲\sqrt{۳}}{\frac{x^۲\sqrt{۳}}{۲}} = ۸$

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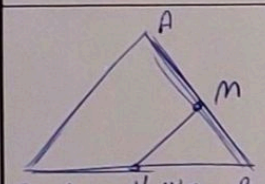
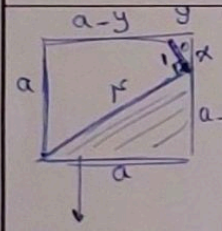


$\frac{S_{ABC}}{S_{BMN}} = \frac{BA \times BC}{BM \times BN} = \frac{BA}{BM} \times \frac{۳}{۲} = ۲$ ($BC = ۳x$, $BN = ۲x$)

$\frac{BA}{BM} = \frac{۹}{۳} \quad \frac{AM}{BM} = \frac{۶}{۳} \rightarrow \frac{BM}{AM} = \frac{۳}{۶}$

۸



$\rightarrow \frac{y}{a-x} = \frac{x}{a} = \frac{۱}{۴} \rightarrow ۴x = a$

$\rightarrow ۴y = a - x \Rightarrow a = ۴y + x$

$۴x = ۴y + x$

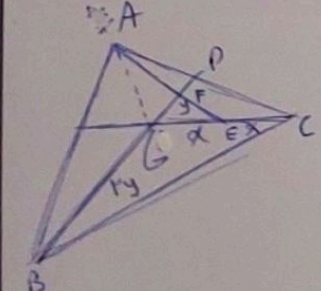
$۳x = ۴y$

$\frac{x}{y} = \frac{۴}{۳}$

$(\frac{a}{۴x} - x)^۲ + (\frac{a}{۴x})^۲ = ۱۴ \rightarrow ۱۴x^۲ + ۹x^۲ = ۱۴ \quad x = \frac{۴}{۳} \rightarrow ۴x\frac{۴}{۳} = \frac{۱۶}{۳} = a$

$S_{\text{مربع}} = (\text{قطر})^۲ = a^۲ = (\frac{۱۶}{۳})^۲ = \frac{۲۵۶}{۲۳} = ۱۰٫۲۴$

۹



$GE = EC = x$

BD میانه $\rightarrow \frac{BG}{GP} = ۲ \quad BG = ۲y \quad GP = y$

$\triangle AGC \rightarrow AE, GD$ میانه $\rightarrow GF = \frac{۲}{۳}y \quad FD = \frac{۱}{۳}y$

$\frac{BD}{FD} = \frac{۲y + y}{\frac{۱}{۳}y} = ۹$

۱۰