یازدهم تیر B

تکلیف ۱۷

امیرمحمد فروجانی

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$A\begin{vmatrix}-2\\k\end{vmatrix}\quad B\begin{vmatrix}4\\m\end{vmatrix}\quad \frac{m-k}{6}=-\frac{1}{2}\to -6=2m-2k\to m-k=-3\to m=k-3$

$\sqrt{(m-k)^2+36}^{\,2}=\ldots^2\to (m-k)^2+36\Rightarrow m=k-3\to(k-3-k)^2\to 9+36=45$ ✓

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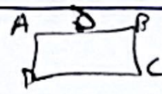
$A\begin{vmatrix}-1\\4\end{vmatrix}\quad B\begin{vmatrix}3\\1\end{vmatrix}\quad C\begin{vmatrix}x\\y\end{vmatrix}\quad D\begin{vmatrix}-1-x\\y+3\end{vmatrix}$



$x_A+x_C=x_B+x_D,\quad y_A+y_C=y_B+y_D$

$-1+x=3-1-x\to 2x=2\to x=\frac{3}{2}$

$4+y=1+y+3\to y+4=y+4$

$m_{AB}=\frac{\Delta y}{\Delta x}=\frac{1-4}{3+1}=-\frac{3}{4}\quad m_{AD}=\frac{\Delta y}{\Delta x}=\frac{4-y-3}{\ldots}\to\frac{1-y}{x}$

$\sqrt{(1-4)^2+(3+1)^2}\to\sqrt{25}=5$

$\frac{1-y}{x}\times -\frac{3}{4}=-1\to\frac{4}{3}=\frac{\ldots}{\ldots}\to 3-3y=4\to -2y=\ldots\to y=-1$

$\sqrt{(4-y-3)^2+(-1+1+x)^2}=\frac{5}{2}\quad \frac{5}{2}+5\to\frac{15}{2}\times 2=15$ ✓

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$2mx+(m^2-1)y=3\to -\frac{a}{b}\to -\frac{2m}{m^2-1}=\tan 60=\sqrt{3}\to \sqrt{3}m^2+2m-\sqrt{3}=0$

$m^2+2m-3=0\ (m+3)(m-1)\to -\frac{3}{\sqrt{3}}\to -\sqrt{3}\quad \frac{1}{\sqrt{3}}=\frac{\sqrt{3}}{3}$

$\frac{\sqrt{3}}{3}-(-\sqrt{3})\to\frac{\sqrt{3}}{3}+\frac{3\sqrt{3}}{3}\to\frac{4\sqrt{3}}{3}$ ✓

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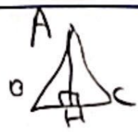

$A\begin{vmatrix}1\\9\end{vmatrix}\quad B\begin{vmatrix}3\\3\end{vmatrix}\quad C\begin{vmatrix}7\\11\end{vmatrix}$

$BC\to\frac{\Delta y}{\Delta x}\to\frac{11-3}{7-3}\to\frac{8}{4}=2\to y-3=2(x-3)\to y=2x-3$

$\frac{|1(9)-2(1)+3|}{\sqrt{4+1}}=\frac{10}{\sqrt{5}}\Rightarrow\frac{2\cdot 10\sqrt{5}}{5}\to 2\sqrt{5}$ ✓

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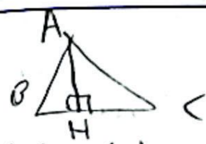
$AB=y+3x=7\quad AC=4y-3x=17\quad BC=2y-7x=-19$



$\begin{cases}4y+3x=7\\4y-3x=17\end{cases}\to -8x=-28$

$-11x=-11\to x=1\to y=5\quad \begin{vmatrix}1\\5\end{vmatrix}$

$\frac{|2(5)-7(1)+19|}{\sqrt{49+4}}=\frac{22}{\sqrt{53}}$ ✗

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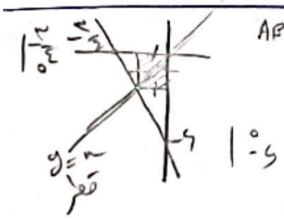

$AB\to\frac{\Delta y}{\Delta x}\to\frac{-6-0}{0+\frac{3}{4}}=-\frac{6\times 4}{3}=-8\to y+6=-8(x-0)\to y=-8x-6$

$y=-8x-6,\ y=x\to -8x-6=x\to -9x=6\to x=-\frac{6}{9}=-\frac{2}{3}\to y=-\frac{2}{3}$

$\sqrt{(-\frac{2}{3}-0)^2+(-\frac{2}{3}-0)^2}\to\sqrt{\frac{4}{9}+\frac{4}{9}}\to\sqrt{\frac{8}{9}}\to\frac{\sqrt{8}}{3}$ ✓

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$y-ax=1\quad ay-x=a-1$

$a=\frac{1}{a}\to a^2=1\to a=\pm1\to -1\to y+x=1\xrightarrow{(1,2)}1+2=1\alpha$

$y+x=2\to 1+2=2\alpha$

$\Rightarrow 1=a\to y-x=1,\ y-x=0\to y=x\to\frac{|c-c'|}{\sqrt{a^2+b^2}}$

$\frac{|0+1|}{\sqrt{1+1}}=\frac{1}{\sqrt{2}}\leftarrow 2\times 5=x^2+\frac{1}{2}\quad x^2=\frac{49}{2}\quad x=\frac{7}{\sqrt{2}}$

$\frac{7}{\sqrt{2}}\times\frac{1}{\sqrt{2}}=\frac{7}{2}=3/5$ ✓

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$A\,|\,{}^{4}_{0}$

$x-3y=1$

طول ضلع → $\frac{|1(4)-3(0)-1|}{\sqrt{1+9}} = \frac{3}{\sqrt{10}} \to \frac{3\sqrt{10}}{10} = AH \to S = \frac{1}{2}\times\frac{3}{\sqrt{10}}\times\frac{3}{\sqrt{10}} \to \frac{1}{2}\times\frac{9}{10} = \boxed{\frac{9}{20}}$ ← جواب آخر

$|\,{}^{4}_{\frac{1}{2}}$ ~~برقرار~~

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$|\,{}^{-\frac{1}{2}}_{a}$ $|\,{}^{-\frac{1}{3}}_{b}$

$\Delta y = b-a$

$\Delta x = -\frac{1}{3}+\frac{1}{2} = \frac{1}{6}$

$\frac{\Delta y}{\Delta x} = \sqrt{3} \to b-a = \frac{\sqrt{3}}{6} \to (b-a)^2 = (\frac{\sqrt{3}}{6})^2 = \frac{3}{36} = \frac{1}{12}$

$\to \sqrt{\Delta x^2+\Delta y^2} \to \sqrt{\frac{1}{36}+\frac{1}{12}} \to \sqrt{\frac{4}{36}} \to \sqrt{\frac{1}{9}} \to \frac{1}{3} \to \frac{1}{3}\times\sqrt{2} \to \boxed{\frac{\sqrt{2}}{3}}$

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$|\,{}^{-3}_{-4}$ L

$\to y = -\frac{3}{4}x$ $\sqrt{x^2+\frac{9}{16}x^2} = 5$

$x^2+\frac{9}{16}x^2 = 25 \to x \to 4$ ✗, -4 ✓ $\to |\,{}^{-4}_{3}$

$a=\frac{3}{4} \to y = \frac{3}{4}x$

$\sqrt{(-4-0)^2+(-3-0)^2} = 5$

$x^2+y^2=25$

$\to y = \frac{4}{3}x+\frac{25}{3} \to 3y = 4x+25$

$\to y = -\frac{3}{4}x - \frac{25}{4} \to 4y = -3x-25$

$y_1 = y_2$

$\to -\frac{3}{4}x - \frac{25}{4} = \frac{4}{3}x + \frac{25}{4}$

$\to -\frac{25}{12}x = \frac{50}{4} \to x = -7 \to y = -1$

$|\,{}^{-7}_{-1}$ ✓

$x \times y \to -7\times -1 = \boxed{7}$ ✓

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۱۵) مختصات نقطه B محل برخورد AB و BC

$$\begin{cases} y + 2x = 7 \\ 2y - 7x = -19 \end{cases} \rightarrow x = 3 \quad y = 1$$

$$BH : AC \text{ از } B \text{ فاصله} = \frac{|4 - 9 - 17|}{\sqrt{14 + 9}} = \frac{22}{5} = 4,4$$

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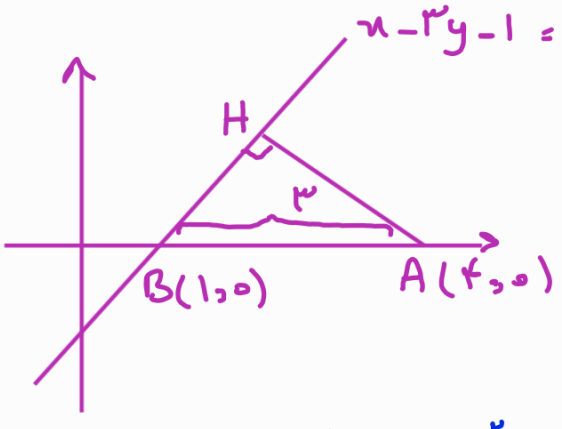
۱۸) ابتدا شکل سوال را رسم کرده و طول ضلع AH را می‌یابیم



$$|AH| = \frac{|4 - 0 - 1|}{\sqrt{9 + 1}} = \frac{3}{\sqrt{10}}$$

$$\frac{9}{10}(AH)^2 + (BH)^2 = (AB)^2 \rightarrow BH = \frac{9}{\sqrt{10}}$$

$$S_{\Delta} = \frac{9}{\sqrt{10}} \times \frac{3}{\sqrt{10}} \times \frac{1}{2} = \frac{27}{20} = 1,35$$