یازدهم دفتر C ۲۰ دستیاری صفر تالیف ۱۸

س ۱:

$\frac{طول}{عرض}=\frac{5}{4}$ طول $=x$ ، عرض $=y$ ، $\frac{x}{y}=\frac{5}{4} \xrightarrow{} \begin{matrix} y=4k \\ x=5k \end{matrix}$ $S_1=4k\times5k=20k^2$ ، $\frac{x'}{y}=\frac{1+\sqrt5}{2} \xrightarrow{y=4k} x'=2k(1+\sqrt5)$

د

$S_2=4k\times4k(\frac{1+\sqrt5}{2})=16k^2(\frac{1+\sqrt5}{2})$ $\frac{S_2}{S_1}=\frac{16k^2(\frac{1+\sqrt5}{2})}{20k^2}=\frac{4}{5}(\frac{1+\sqrt5}{2})=\frac{2}{5}(1+\sqrt5)$

س ۲:

$\frac{قطر}{طول}=\frac{1+\sqrt5}{2}$ $x=$ طول ، $y=$ عرض ، قطر $=\sqrt{x^2+y^2}$

د

$\frac{\sqrt{x^2+y^2}}{x}=\frac{1+\sqrt5}{2} \rightarrow \frac{x^2+y^2}{x^2}=\frac{(1+\sqrt5)^2}{4} \xrightarrow[\text{صورت}]{\text{تفکیک کسر در}} \frac{y^2}{x^2}=\frac{(1+\sqrt5)^2-4}{4}$ $\frac{x^2}{y^2}=\frac{2}{1+\sqrt5}$

س ۳:

$3a+\sqrt{2a^2+4a}=2 \ , \ \frac{a+1}{a}=?$

$3a+\sqrt{2a^2+4a}=2 \rightarrow \sqrt{2a^2+4a}=2-3a \Rightarrow 2a^2+4a=4-12a+9a^2 \Rightarrow 7a^2-16a+4=0 \Rightarrow a^2-14a+28=0$

$\rightarrow (a-14)(a-2)=0$

د

$a=\frac{14}{7}=2 \rightarrow$ غ

$\boxed{a=\frac{2}{7}}$ $\frac{a+1}{a}=\frac{\frac{2}{7}+1}{\frac{2}{7}}=\frac{\frac{9}{7}}{\frac{2}{7}}=\frac{9}{2}$

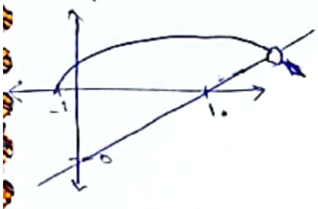
س ۴:

$\frac{\sqrt{x+1}(3-\sqrt{x-1})-\sqrt{x+1}(\sqrt{x-1}+3)}{9-(x-1)}=\frac{(\sqrt{x-1})^2}{\frac{x-1}{\sqrt{x-1}}} \rightarrow \frac{3\sqrt{x+1}-\sqrt{x^2-1}-\sqrt{x^2-1}-3\sqrt{x+1}}{10-x}=\sqrt{x-1}$

$* \sqrt{x-1}\neq0$

د

$\frac{-2\sqrt{x^2-1}}{10-x}=\sqrt{x-1} \rightarrow -2(\cancel{\sqrt{x-1}})(\sqrt{x+1})=(10-x)\cancel{\sqrt{x-1}} \rightarrow -2\sqrt{x+1}=10-x \rightarrow \sqrt{x+1}=\frac{x}{2}-5$



یک ریشه (+) دارد

س ۵:

$\frac{2-\sqrt{2-x}-\sqrt{2-x}-2}{\underbrace{4-2+x}_{x\neq-2 \rightarrow \sqrt{2-x}\neq0}}=\frac{(\sqrt{2-x})^2}{\frac{2-x}{5\sqrt{2-x}}}=\frac{\sqrt{2-x}}{5}$ $-10\sqrt{2-x}=\sqrt{2-x}(2+x) \rightarrow -10=2+x$ د

$\rightarrow x=-12$

جواب مثبت ندارد

س ۶:

$(\frac{1}{x}+\frac{1}{1-x})^2-2(\frac{1}{x(1-x)})=\frac{160}{9} \to (\frac{1}{x(1-x)})^2-2(\frac{1}{x(1-x)})=\frac{160}{9} \xrightarrow{\frac{1}{x(1-x)}=t} t^2-2t=\frac{160}{9}$

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$\underbrace{t^2-2t+1}_{(t-1)^2}=\frac{169}{9} \Rightarrow t-1=\frac{13}{3} \to t=\frac{16}{3}$ $\quad \frac{1}{x(1-x)}=\frac{16}{3} \to -x^2+x-\frac{3}{16}=0 \quad S_1=1$

$\to t-1=-\frac{13}{3} \to t=-\frac{10}{3}$ $\quad \frac{1}{x(1-x)}=\frac{-10}{3} \to -x^2+x+\frac{3}{10}=0 \quad S_2=1$

$\boxed{S_1+S_2=2}$

س ۷:

$\sqrt{-x^2+6x-x} \to -x^2+6x-8\geq 0 \to x^2-6x+8\leq 0 \to (x-2)(x-4)\leq 0$ $\quad$ x: 2, 4 : + 0 − 0 + $\to [2,4]$ (I)

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$\sqrt{-x^3+4x^2+25x-100} \to -x^3+4x^2+25x-100\geq 0 \Rightarrow x^3-4x^2-25x+100\leq 0 \to (x^3-25x)-(4x^2-100)\leq 0$

$x(x^2-25)-4(x^2-25)\leq 0 \to (x-5)(x+5)(x-4)\leq 0$ $\quad$ x: −5, 4, 5 : − 0 + 0 − 0 +

$(-\infty,-5]\cup[4,5]$ (II) $\quad$ (I) $\cap$ (II) $\Rightarrow x=4 \to \sqrt{4+\sqrt{-16+24-8}}-\ldots+\sqrt{16+\sqrt{-64+64+100-100}}=4+\ldots$

$\boxed{\text{یک جواب}}$

س ۸:

	-2	1	
	$-x-2-x+1$	$x+2-x+1$	$x+2+x-1$
	$-2x-1$	3	$2x+1$

$\to 3=-x+\frac{17}{3} \to x=8$ غ

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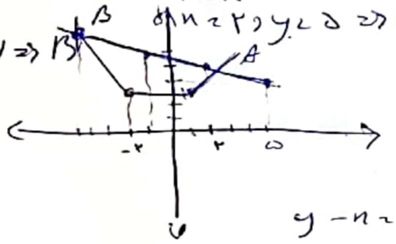
$\begin{cases} y+2x=-1 \\ 3y+x=17 \end{cases}$ $\quad -5x+20 \quad x=-4, y=7 \Rightarrow B$

$y-2x=+1$, $3y+x=17$, $7x=14$, $x=2, y=5 \Rightarrow A$



$\overline{AB}=\sqrt{\Delta x^2+\Delta y^2}=\sqrt{36+4}=\sqrt{40}=\boxed{2\sqrt{10}}$

س ۹:

$y=\sqrt{x^2-4x+4}$, $y=\frac{1}{2}x+2$

$\hookrightarrow \sqrt{(x-2)^2}=|x-2| \to$ 2 : $-x+2$ | $x-2$

$y+x=2$, $-y+\frac{x}{2}=-2$, $\frac{3}{2}x=0 \to x=0, y=2$

$y-x=-2$, $-y+\frac{x}{2}=-2$, $-\frac{1}{2}x=-4$

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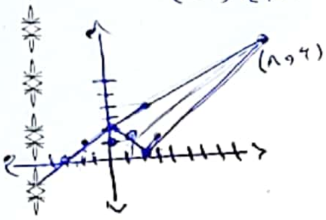

فاصله A از خط $y=-x+2$

$BC=\sqrt{4+4}=2\sqrt{2}$

$\frac{|6+8-2|}{\sqrt{2}}=\frac{12\sqrt{2}}{2}=6\sqrt{2}$

$S=\frac{2\sqrt{2}\times 6\sqrt{2}}{2}=\boxed{12}$

سوال ۱۰

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$\frac{1}{x}+\frac{1}{x+9}=\frac{1}{20} \to 20(x+9)+20x=x(x+9)$

$20x+180+20x=x^2+9x$

$x^2-31x-180=0$

$(x-36)(x+5)=0$

$\boxed{x=36}$ $\quad x=-5$ غ