۱۸٫۵

نام و نام خانوادگی ...شکیبا ...کرکی........ پاسخنامه تشریحی تکلیف شماره .... کلاس ....

۱ (۲)

$\frac{L}{W}=\frac{5}{2} \to L=\frac{5W}{2}$ $\quad L\times W=\frac{5W^2}{2}=S$

$\frac{L'}{W}=\frac{1+\sqrt5}{2} \to L'=\frac{(1+\sqrt5)(W)}{2}$ $\quad L'\times W=\frac{(1+\sqrt5)(W^2)}{2}=S'$

$\frac{S'}{S}=\frac{\frac{(1+\sqrt5)(W^2)}{2}}{\frac{5W^2}{2}}=1+\sqrt5\times\frac{2}{5}=\frac{2(1+\sqrt5)}{5}$ ✓

۲ (۲)

$L^2+W^2=b^2 \quad \frac{b}{L}=\frac{1+\sqrt5}{2}$ $\quad \frac{W^2}{L^2}=\frac{1+\sqrt5}{2} \to \frac{L^2}{W^2}=\frac{2}{1+\sqrt5}$

$\frac{b^2}{L^2}=\left(\frac{1+\sqrt5}{2}\right)^2 \to \frac{1+5+2\sqrt5}{4}=\frac{6+2\sqrt5}{4} \Rightarrow \frac{3+\sqrt5}{2}$

$\frac{L^2+W^2}{L^2}=\frac{3+\sqrt5}{2} \to \frac{L^2}{L^2}+\frac{W^2}{L^2}=1+\frac{W^2}{L^2}=\frac{3+\sqrt5}{2} \to \frac{W^2}{L^2}=\frac{1+\sqrt5}{2}$ ✓

۳ (۲)

$\sqrt{2x^2+4x}=2-3x \to 2x^2+4x=4+9x^2-12x$ $\quad \frac{16\pm\sqrt{144}}{14} \to \frac{16\pm12}{14}$ $\begin{cases}2\\ \frac{2}{7}\end{cases}$

$7x^2-16x+4=0 \quad (-16)^2-4(7)(4)=144$

$2 \to 3(2)+\sqrt{2(2)^2+4(2)}=6+4=2$ ✗ $\quad \frac{x+1}{x} \to \frac{\frac{2}{7}+1}{\frac{2}{7}}=\frac{\frac{9}{7}}{\frac{2}{7}}=\frac{9}{2}$ ✓

$\frac{2}{7} \to 3(\frac{2}{7})+\sqrt{2(\frac{4}{49})+4(\frac{2}{7})} \to \frac{6}{7}+\frac{8}{7}=\frac{14}{7}=2$ ✓

۴ (۱)

ریشه مثبت دارد ✗

$\frac{\sqrt{x+1}}{\sqrt{x-1}+3}-\frac{\sqrt{x+1}}{3-\sqrt{x-1}}=\frac{x-1}{\sqrt{x-1}}$ $\quad \frac{+3\sqrt{x+1}-\sqrt{x^2-1}-\sqrt{x^2-1}-3\sqrt{x+1}}{9-x+1}=\frac{x-1}{\sqrt{x-1}}$

$\frac{-2\sqrt{x^2-1}}{8-x}=\frac{x-1}{\sqrt{x-1}} \to \frac{-2\sqrt{x+1}}{8-x}=\frac{\sqrt{x-1}}{\sqrt{x-1}} \to \frac{-2\sqrt{x+1}}{8-x}=1 \to -2\sqrt{x+1}=8-x$

$4x+4=64+x^2-16x \to x^2-20x+60=0 \quad \Delta=160, \quad \frac{20\pm\sqrt{160}}{2}$ ریشه ندارد $\sqrt{160}<\sqrt{400}$

۵ (۱٫۵)

$\frac{1}{\sqrt{2-x}+2}-\frac{1}{2-\sqrt{2-x}}=\frac{2-x}{5\sqrt{2-x}}$ $\quad \frac{2-\sqrt{2-x}-\sqrt{2-x}-2}{4-2+x}=\frac{-2\sqrt{2-x}}{2+x}=\frac{2-x}{5\sqrt{2-x}}$

$x<0 \to 20+10x=4-x^2 \to x^2+10x-24=0$ $\quad \Delta=b^2-4ac \to 100+4(1)(24)=196$

$\frac{-10\pm\sqrt{196}}{2}$ $\begin{cases}2\\ -12\end{cases}$ ریشه مثبت ندارد — ریشه مخرج

$x\geq0 \to 20-10x=4-x^2 \to x^2-10x+16=0$

$\Delta=b^2-4ac \to (-10)^2-4(1)(16)=100-64=36$

$\frac{10\pm\sqrt{36}}{2}$ $\begin{cases}8 \to \frac{1}{\sqrt{2-8}+2}-\frac{1}{2-\sqrt{2-8}}=\frac{2-8}{5\sqrt{2-8}} \Rightarrow \text{ق ن}\\ 2 \to \frac{1}{\sqrt{2-2}+2}-\frac{1}{2-\sqrt{2-2}}=\frac{2-2}{5\sqrt{2-2}} \Rightarrow \frac{2-2}{0}=\text{ق ن}\end{cases}$

۶ (۲)

$\frac{(1-x)^2+x^2}{x^2(1-x)^2}=\frac{160}{9}$ $\quad 1-2x+2x^2=\frac{160}{9}x^2(1-2x+x^2)$ ~~$=9-18x+18x^2$~~

$9-18x+18x^2=160x^2-320x^3+160x^4 \to 160x^4-320x^3+142x^2+18x-9=0$

$S=-\frac{b}{a}=0$ $\quad S=-\frac{-320}{160}=2$ ✓

$a=160 \quad b=-320$

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۷ (۲)

$-x^2+6x-8\ge 0 \to x^2-6x+8\le 0 \quad (x-2)(x-4)\le 0 \Rightarrow x\in[2,4]$

$-x^3+4x^2+25x-100 \begin{cases} x=2 \to -8+16+50-100=-42 \\ x=3 \to -27+36+75-100=-16 \end{cases}$ جواب دارد

$x=4 \to -64+64+100-100=0 \quad x\in[4,5] \quad [4,5]\cap[2,4]=\{4\}$ ✓

$x=5 \Rightarrow -125+100+125-100=0$

$4 \to \sqrt{4+\sqrt{-64+64+100-100}}+\sqrt{16+\sqrt{-16+16+2^4-8}}=4+2 \quad \sqrt{4}+\sqrt{16}=6 \to 2+4=6$ ✓

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۸ (۲)

$|x+2|+|x-1| \begin{cases} x+2+x-1=2x+1 & x\ge 1 \\ x+2-x+1=3 & 1>x>-2 \\ -x-2-x+1=-2x-1 & x\le -2 \end{cases}$

$-\frac{1}{3}x+\frac{17}{3}=-2x-1$

$\frac{5}{3}x=-\frac{20}{3}\to 5x=-20$ ✓ $\quad x\le -2$

$-2x-1\to -2(-4)-1=7 \quad B\,\Big|\,{-4 \atop 7}$

$3y=-x+17\to y=-\frac{1}{3}x+\frac{17}{3}\to \frac{7}{3}x=\frac{14}{3}\to x=2 \xrightarrow{2x+1} 2(2)+1=5 \quad A\,\Big|\,{2 \atop 5}$

$-\frac{1}{3}x+\frac{17}{3}=3\to -x+17=9\to -x=-8\to x=8$ ✗ $1>x>-2$ $\quad \sqrt{\Delta x^2+\Delta y^2}\to\sqrt{6^2+(2)^2}\to\sqrt{40}$ ✓

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۹ (۲)

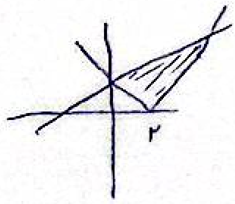
$\sqrt{x^2-4x+4}=|x-2| \quad x-2=\frac{1}{2}x+2\to \frac{1}{2}x=4\to x=8 \quad (8)-2=6 \quad y=6$

$A\,\Big|\,{8 \atop 6}$

$\frac{1}{2}x+2=y \xrightarrow{x=0} \frac{1}{2}(0)+2=y\to y=2 \quad B\,\Big|\,{0 \atop 2}$

$|x-2|=0\to x-2=0\to x=2 \quad C\,\Big|\,{2 \atop 0}$

$\frac{1}{2}\begin{vmatrix}8&6&1\\0&2&1\\2&0&1\end{vmatrix}=\frac{1}{2}(16+12+0-4-0-0)=12$ ✓



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۱۰ (۲)

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

$20x+180+20x=x^2+9x \Rightarrow x^2-31x-180$

$(x+5)(x-36)=0 \xrightarrow{x>0} x=36$ ✓

۱۴

$$\sqrt{x+1}\left(\frac{1}{\sqrt{x-1}+3}-\frac{1}{3-\sqrt{x-1}}\right)=\sqrt{x+1}\left(\frac{-2\sqrt{x-1}}{9-(x-1)}\right)=\frac{x-1}{\sqrt{x-1}}$$

$$\sqrt{x+1}\left(\frac{-2\sqrt{x-1}}{10-x}\right)=\sqrt{x-1}\Rightarrow -2\sqrt{x+1}=10-x \xrightarrow[x\geq 10]{\text{توان ۲}}$$

$$x^2-24x+94=0\rightarrow x=12\mp 4\sqrt{3}\rightarrow \boxed{\text{ق ق}\quad 12+4\sqrt{3}}$$