1)

$$S_2 = L_2 \times W \quad\to\quad \frac{S_2}{S_1} = \frac{L_2 \times y}{L_1 \times y} = \frac{\frac{1+\sqrt{5}}{2}}{\frac{\sqrt{5}}{2}} = \frac{2+2\sqrt{5}}{10} = \frac{2+2\sqrt{5}}{5}$$
$$S_1 = L_1 \times W$$

2)

$$a^2 + b^2 = \frac{4+2\sqrt{5}}{2} a^2 \to b^2 = \frac{2+2\sqrt{5}}{2} a^2$$

$$\to \frac{a^2}{b^2} = \frac{4}{2+2\sqrt{5}} = \frac{2}{1+\sqrt{5}}$$

$$\to \frac{2\sqrt{5}-2}{4} = \boxed{\frac{\sqrt{5}-1}{2}}$$

3)

$$3a - 2 - \sqrt{3a^2 + 4a} \underset{\overrightarrow{\times 3}}{\to} 9a^2 - 12a + 4 = 3a^2 + 4a \to 6a^2 - 16a + 4 = 0$$

$$\to a^2 - \frac{14}{6}a + \frac{2}{3} = 0 \to (a-2)(6-16)= 0$$

$$\to a = \frac{16}{6}, \frac{2}{6} \quad a = \frac{4}{6}$$

$$\to a = 2 \to 6 = -4 \quad \text{رد}$$

$$\to a = \frac{2}{6} \to -\frac{8}{6} = -\frac{8}{6} \;\cancel{}\to \frac{a+1}{a} = \frac{\frac{9}{6}}{\frac{2}{6}} \;\boxed{\frac{9}{2}}$$

4)

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

$$\to \sqrt{x+1}\left(\frac{-2\sqrt{x-1}}{10-x}\right) = \sqrt{x-1} \to -2\sqrt{x+1} = 10-x \quad \frac{\text{به توان}}{2}$$

$$4x + 4 = x^2 - 20x + 100 \to x^2 - 24x + 96 = 0$$

$$\to x = 12 + 4\sqrt{3} \boxed{\text{قابل قبول}}$$

5)

$$\sqrt{2-x} = t \to \frac{1}{t+2} + \frac{1}{t-2} = \frac{t^2}{5t} \quad t \neq 0 \quad \frac{2t}{t^2-4} = \frac{t}{5} \to \cancel{} \; t^2 - 4 = 10$$

$$\to t^2 = 14 \to t = \pm\sqrt{14} \underset{t>0}{\xrightarrow{\hspace{1cm}}} t = \sqrt{14} = \sqrt{2-x} \to \boxed{x = -12}$$

6)

$$\frac{(1-x)^2 + x^2}{x^2(1-x)^2} = \frac{19.}{9} \to \frac{2(x^2-x)+1}{(x^2-x)^2} = \frac{190}{9} \to \frac{t^2 + 2t + 1}{t^2} = \frac{199}{9}$$

$$\to \left(\frac{t+1}{t}\right)^2 = \left(\frac{14}{3}\right)^2 \to \begin{cases} \frac{t+1}{t} = \frac{14}{3} \to t = \frac{3}{11} \quad ① \\[2mm] \frac{t+1}{t} = -\frac{14}{3} \to t = -\frac{3}{17} \quad ② \end{cases}$$

① $x^2 - x = \frac{3}{11} \to x^2 - x - \frac{3}{11} = 0 \quad D \geq 0 \quad S = -\frac{b}{a} = 1 \to 1+1 = ②$

② $x^2 - x = -\frac{3}{17} \to x^2 - x + \frac{3}{17} = 0 \to S = +1$

$$\sqrt{x+\sqrt{-x^{r}+kx^{r}+rx^{r}\cdot x-1\cdot\cdot}}+\sqrt{x^{r}+\sqrt{-x^{r}+qx-\Lambda}}=x+r$$

$$\downarrow \geqslant \cdot \qquad\qquad \downarrow \geqslant \cdot$$

$$\rightarrow x^{r}(k-x)-r\delta(k-x)\geqslant \cdot \qquad \xrightarrow{(-\mid x)} x^{r}-kx+\Lambda\leqslant \cdot$$

$$\rightarrow (x-\delta)(x+\delta)(k-x)\geqslant \cdot \qquad \rightarrow (x-k)(x-r)\leqslant \cdot$$

$$\rightarrow \begin{array}{ccc} -\delta & k & \delta \\ +\ \phi - \ \phi + \ \phi - \end{array} \qquad\qquad \rightarrow \begin{array}{cc} r & k \\ +\ \phi - \ \phi + \end{array}$$

$$(-\infty, \delta] \cup [k, \delta] \qquad\qquad [r, k]$$

$$\xrightarrow{\cap} \{k\} \rightarrow \text{معادله یک جواب دارد}$$

A) $y=|x+r|+|x-1| \rightarrow \begin{cases} y=rx+1 & x\geqslant 1 \\ y=r & -r\leqslant x\leqslant 1 \\ y=-rx-1 & x<-r \end{cases}$

$$ry+x\geqslant 1r \rightarrow y=-\frac{1}{r}x+\frac{1r}{r}$$

اگر موارد با هم مساوی $\frac{c}{r}x+\frac{1r}{r}=r$ قرار دهیم پیدا میشد

مورد وسط نرخ $\frac{c}{r}$ است و دو مورد که ریشه ها جواب بدهند پیدا:

$$A\left|\frac{-k}{v} \quad , \quad B\right|\frac{\delta}{\delta}$$

$$\rightarrow AB=\sqrt{r\cdot+k}=\sqrt{rk}$$

9) $y=\sqrt{(x-r)^{r}}=|x-r| \rightarrow \begin{cases} x-r & x\geqslant r \\ -x+r & x\leqslant r \end{cases}$

$$y=\frac{1}{r}x+r$$

اگر کدوم مورد را برابر با $\frac{1}{r}x+r$ قرار دهیم

نرم ۲ نقطه میباشند پس:

$$A\left|\frac{\wedge}{q} \quad B\right|\frac{k}{\delta} \quad C\right|\frac{r}{r}$$

$$BC: y=-x+r$$

$$AH=\frac{|\Lambda-r+k|}{\sqrt{r}}=k\sqrt{r} \Big\} \rightarrow S=\frac{AH\times BC}{r}=\frac{k\sqrt{r}\times r\sqrt{r}}{r}=\boxed{1r}$$

lo) $\frac{1}{x}+\frac{1}{x+q}=\frac{1}{r\cdot} \rightarrow x^{r}-r1x-1\Lambda\cdot=\cdot \rightarrow (x-rk)(x+\delta)=\cdot$

$$\rightarrow x=rk \quad , \quad x=-\delta \quad \text{غیر قابل قبول}$$

$$\rightarrow \text{بموز در ۲۴ ساعت به تنهایی انجام}$$
میدهد.