آناز کریم زاده - تکلیف ۱۸

(۱۹)

-۱

x [rectangle with side y] $\to x$ [rectangle with side $y+z$] $\to \frac{y}{x} = \frac{5}{4} \to \frac{y+z}{x} = \frac{5+z}{4} = \frac{1+\sqrt{5}}{2}$

$\to 10 + 2z = 4 + 4\sqrt{5} \to 2z = 4(1+\sqrt{5}) - 10$

$\to z = 2(1+\sqrt{5}) - 5$

$\frac{S_2}{S_1} = \frac{x(y+z)}{xy} = \frac{4(5+2+2\sqrt{5}-5)}{20} = \frac{8(1+\sqrt{5})}{20} = \boxed{\frac{2(1+\sqrt{5})}{5}}$

(۲)

-۲

$\to \frac{\sqrt{x^2+y^2}}{y} = \frac{1+\sqrt{5}}{2} \to 2\sqrt{x^2+y^2} = y(1+\sqrt{5}) \to 4x^2 + 4y^2 = y^2(1+\sqrt{5})^2$

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

$\frac{2}{1+\sqrt{5}} =$ جذر $\leftarrow \sqrt{\frac{2}{1+\sqrt{5}}} = \frac{y}{x}$

(۲)

-۳

$3a + \sqrt{2a^2+4a} = 2 \to \sqrt{2a^2+4a} = 2 - 3a \to 2a^2 + 4a = 9a^2 + 4 - 12a$

$2a(a+2) \geq 0 \to$ (-2, 0: $+ \mid - \mid +$) $\quad 2 \geq 3a \to \frac{2}{3} \geq a \quad$ ↳ $7a^2 - 16a + 4 \to a^2 - 16a + 28$

$(a-14)(a-2)$

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

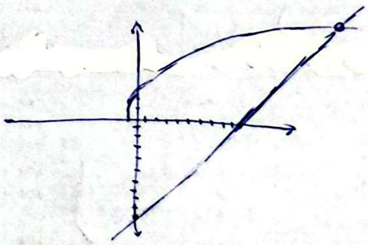
$\left\{ \frac{14}{7} = 2 \right.$ ✗, $\frac{2}{7}$ ✓

(۲)

-۴

$\frac{\sqrt{x+1}}{\sqrt{x-1}+3} - \frac{\sqrt{x+1}}{3-\sqrt{x-1}} = \frac{x-1}{\sqrt{x-1}} \quad \to x \geq -1,\ x \geq 1,\ x \neq \quad \rightsquigarrow \frac{3\sqrt{x+1} - 2\sqrt{x^2-1} - 3\sqrt{x+1}}{9-x+1} = \sqrt{x-1}$

$\to \frac{+2\sqrt{x-1}\sqrt{x+1}}{x-10} = \sqrt{x-1} \to \frac{+2\sqrt{x+1}}{x-10} = 1 \to 2\sqrt{x+1} = x - 10 \to$



① جواب دارد

(۲)

-۵

$\frac{1}{\sqrt{2-x}+2} + \frac{1}{\sqrt{2-x}-2} = \frac{\sqrt{2-x}}{5} \to \frac{2\sqrt{2-x}}{2-x+(-4)} = \frac{\sqrt{2-x}}{5} \to 10 = -x - 2 \to \boxed{x = -12}$ ✗

$-x-2$

↳ هیچ ریشه مثبتی ندارد

(۲)

-۶

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

(۱٫۵)

↳ $\left(\frac{1}{x} - \frac{1}{x-1}\right)^2 + 2\left(\frac{1}{x^2-x}\right) - \frac{160}{9} = 0 \to \left(\frac{x-1-x}{x^2-x} + \frac{16}{3}\right)\left(\frac{-1}{x^2-x} - \frac{10}{3}\right) = 0 \to \left(\frac{-3+16x^2-16x}{3x^2-3x}\right)\left(\frac{-3-10x^2+10x}{3x^2-3x}\right)$

$16x^2 - 16x - 3 = 0 \to \Delta > 0 \to \frac{16}{16} = ① \to$ مجموع ریشه‌ها

$\to -10x^2 + 10x - 3 \to \Delta < 0$

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

$\to t = 0.3,\ \frac{-3}{16}$

$S_1 = 1 \quad S_2 = 1 \quad 1+1 = 2$

آیناز کریم زاده

۷-

$$\sqrt{x+\sqrt{-x^3+4x^2+25x-100}}+\sqrt{x^2+\sqrt{-x^2+6x-8}}=x+2$$

$(4-x)(x-5)(x+5)$ $\qquad$ $-(x-2)(x-4)$

$-5 \quad 4 \quad +5$: $+ \mid - \mid + \mid -$ $\qquad$ $2 \quad 4$: $- \mid + \mid -$

$\Rightarrow$ اشتراک دامنه‌ها $=4$ $\rightarrow$ جواب $\perp$

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۸- (۱٫۵)

$y=|x+2|+|x-1|$ $\qquad$ $3y+x=17 \rightarrow y=\frac{-x+17}{3}$

$x>1 \rightarrow 2x+1=\frac{-x+17}{3} \rightarrow 6x+3=-x+17 \rightarrow x=2$

$-2<x<1 \rightarrow -x+17=9 \rightarrow x=8$ ✗

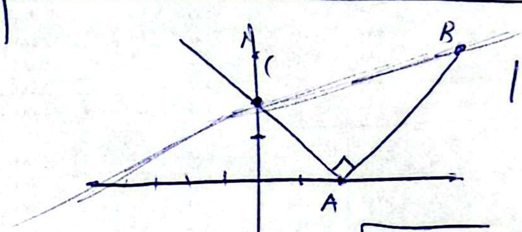
$x<-2 \rightarrow -2x-1=\frac{-x+17}{3} \rightarrow -6x-3=-x+17 \rightarrow x=-4$

$y=|x+2|+|x-1|$ $\begin{cases} x=2 \rightarrow y=5 \\ x=-4 \rightarrow y=7 \end{cases}$ $\rightarrow AB = 2\sqrt{10}$

۹-

$y=\sqrt{x^2-4x+4}=\sqrt{(x-2)^2}=|x-2|$

$y=\frac{1}{2}x+2$



$AB=\sqrt{(8)^2+6^2}=10$

$AC=\sqrt{2^2}=2$

$\boxed{12}$

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۱۰-

تعداد $=x$

نفرها $=y=x+9$

تعداد+نفرها $=20$

$\frac{1}{x}+\frac{1}{x+9}=\frac{1}{20} \rightarrow \frac{20x+180+20x-x^2-9x}{20(x^2+9x)}=0$

$\rightarrow x^2-31x-180=0 \rightarrow (x-36)(x+5)=0 \Rightarrow \boxed{x=36}$

۲