نام و نام خانوادگی ......الناصیت ایمنیزی...... ۲۰ پاسخنامه تشریحی تکلیف شماره ..۱۸.. کلاس ....پایه دهم.......

۱

نسبت طول به عرض مستطیل در مستطیل طلایی: $\frac{L}{w} = \frac{1+\sqrt{5}}{2} = \frac{L}{4} \Rightarrow$ طول مستطیل جدید $= 2(1+\sqrt{5})$

۲

$$\frac{S_{\text{مستطیل طلایی}}}{S_{\text{مستطیل اولیه}}} = \frac{4\times 2(1+\sqrt{5})}{4\times 5} = \boxed{0.4(\sqrt{5}+1)}$$

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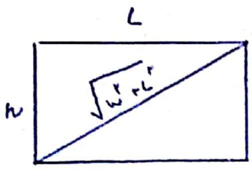

$$\frac{\sqrt{w^2+L^2}}{L} = \frac{1+\sqrt{5}}{2} \xrightarrow{\text{توان ۲}} \frac{w^2+L^2}{L^2} = \frac{6+2\sqrt{5}}{4} = \frac{2(3+\sqrt{5})}{4}$$

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$$2w^2 + 2L^2 = \underbrace{(3+\sqrt{5})L^2}_{3L^2+\sqrt{5}L^2} \rightarrow 2w^2 = \underbrace{L^2 + L^2\sqrt{5}}_{L^2(1+\sqrt{5})}$$

$$w^2 = L^2\left(\frac{1+\sqrt{5}}{2}\right) \Rightarrow \boxed{\frac{L^2}{w^2} = \frac{\sqrt{5}-1}{2}}$$

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$$3a + \sqrt{2a^2+4a} = 2 \Rightarrow \sqrt{2a^2+4a} = 2-3a \xrightarrow{\text{توان ۲}} 2a^2+4a = 9a^2-12a+4 \Rightarrow$$

$$7a^2 - 16a + 4 = 0 \quad \Delta = 256 - 4(4)(7) = 144 \quad a = \frac{16 \pm \sqrt{144}}{14} \rightarrow a = 2,\ a = \frac{2}{7}$$

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$\Rightarrow a = 2 \quad 6 + \sqrt{8+8} = 10 \neq 2$ غ ق ق

$\Rightarrow a = \frac{2}{7} \quad \frac{6}{7} + \sqrt{\frac{8}{49} + \frac{8}{7}} = \frac{6}{7} + \sqrt{\frac{8+56}{49}} = \frac{14}{7} = 2$ ق ق $\qquad \frac{\frac{2}{7}+\frac{7}{7}}{\frac{2}{7}} = \frac{\frac{9}{7}}{\frac{2}{7}} = \boxed{4.5}$

۴

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

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

$$\Rightarrow -2\sqrt{x+1} = (10-x) \xrightarrow{\text{توان ۲}} 4(x+1) = x^2 + 100 - 20x$$

$$x^2 - 24x + 96 = 0 \qquad \Delta = 576 - 4(96) = 192$$

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$$x = \frac{24 \pm \sqrt{192}}{2} \quad \boxed{x = 12 + 4\sqrt{3}} \qquad x = 12 - 4\sqrt{3} \text{ غ ق ق}$$

جواب درست؟!

$$x = \frac{2(12+4\sqrt{3})}{2} = 12 + 4\sqrt{3} \qquad x = \frac{2(12-4\sqrt{3})}{2} = 12 - 4\sqrt{3}$$

۵

$$\frac{1}{\sqrt{2-x}+2} - \frac{1}{2-\sqrt{2-x}} = \frac{2-x}{5\sqrt{2-x}} \rightarrow \underbrace{\frac{1}{t+2} - \frac{1}{2-t}}_{} = \underbrace{\frac{t^2}{5t}}_{} \Rightarrow \frac{-2t}{4-t^2} = \frac{t}{5} \rightarrow -10 = 4 - t^2$$

$(\sqrt{2-x} = t) \qquad \frac{2-t-t-2}{4-t^2} = \frac{-2t}{4-t^2} \qquad \frac{t}{5}$

$t^2 = 14 \rightarrow 2 - x = 14$

۲

$x = -12$

ریشه درست ندارد.

[illegible]

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۶

$$\frac{1}{x^2}+\frac{1}{(1-x)^2}=\frac{170}{9} \to \frac{2x^2-2x+1}{x^2(1-x)^2}=\frac{170}{9}$$

$(t=x(1-x)) \Rightarrow \frac{1-2t}{t^2}=\frac{170}{9} \to 170t^2+18t-9=0$ $\quad \Delta=324-4(9)(170)=6084$

$t=\frac{-18\pm\sqrt{6084}}{340}$ ($\sqrt{6084}=78$)

$t=\frac{3}{16} \to x(1-x)=\frac{3}{16} \Rightarrow x=\frac{1}{4},\ x=\frac{3}{4}$

$t=-\frac{3}{10} \to x(1-x)=-\frac{3}{10} \Rightarrow x=\frac{1}{2}+\frac{\sqrt{55}}{10},\ x=\frac{1}{2}-\frac{\sqrt{55}}{10}$

$\frac{1}{4}+\frac{3}{4}+\frac{1}{2}+\frac{\sqrt{55}}{10}+\frac{1}{2}-\frac{\sqrt{55}}{10}=(2)$

(۲)

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$\sqrt{x+\sqrt{-x^3+4x^2+25x-100}}+\sqrt{x^2+\sqrt{-x^2+6x-8}}=x+2$ $\quad x+2\geq 0 \to x\geq -2$ (I)

$-x^3+4x^2+25x-100\geq 0 \to -(x^3-4x^2-25x+100)\geq 0 \to -(x-4)(x^2-25)\geq 0 \to -(x-4)(x-5)(x+5)\geq 0$

$-5 \quad 4 \quad 5$: $+ \ - \ + \ - \ +$ $\quad x\in(-\infty,-5]\cup[4,5]$ (II)

$-x^2+6x-8\geq 0 \to -(x-2)(x-4)\geq 0$ $\quad 2 \quad 4$: $+ \ - \ + \quad x\in[2,4]$ (III)

(I) ∩ (II) ∩ (III) $\to x=4 \Rightarrow \sqrt{4+\sqrt{0}}+\sqrt{16+\sqrt{0}}=4+2$

تنها جواب $\Leftarrow x=4$

(۲)

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$y=|x+2|+|x-1| \longrightarrow \begin{cases} 2x+1 & , x\geq 1 \\ 3 & , -2\leq x\leq 1 \\ -2x-1 & , x\leq -2 \end{cases}$

$3y+x=17 \Rightarrow y=\frac{17-x}{3}$

$x\geq 1 \to 2x+1=\frac{17-x}{3} \to 6x+3=17-x \to 7x=14 \Rightarrow x=2$ $\quad y=2(2)+1=5$ $\quad A(2,5)$

$x\leq -2 \to -2x-1=\frac{17-x}{3} \to -6x-3=17-x \to 5x=-20 \Rightarrow x=-4$ $\quad y=-2(-4)-1=7$ $\quad B(-4,7)$

$AB=\sqrt{(2+4)^2+(5-7)^2}=\sqrt{36+4}=\sqrt{40}=2\sqrt{10}$

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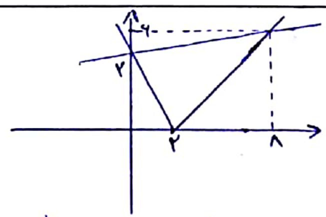
$y=\sqrt{x^2-4x+4}=\sqrt{(x-2)^2}=|x-2|$



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

$x-2=\frac{1}{2}x+2 \to 2x-4=x+4 \to x=8$ $\quad y=6$

$2-x=\frac{1}{2}x+2 \to 4-2x=x+4 \to x=0$ $\quad y=2$

$S=\frac{1}{2}\left|\begin{vmatrix} 2 & 0 & 1 \\ 0 & 2 & 1 \\ 8 & 6 & 1 \end{vmatrix}\right|=$

$\frac{1}{2}|(4-16-12)|=\frac{1}{2}\times 24=12$

(۲)

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جوز $\to x$

فرهاد $\to x+9$

باهم $\to$ ۲۰ ساعت

$\frac{1}{x}+\frac{1}{x+9}=\frac{1}{20} \to \frac{x+9+x}{x^2+9x}=\frac{2x+9}{x^2+9x}=\frac{1}{20} \to x^2+9x=40x+180$

$\to x^2-31x-180=0$ $\quad \Delta=961-4(-180)=1681$

$x=\frac{31\pm\sqrt{1681}}{2}$ → $x=\frac{31+41}{2}=36$ ق ق ; $x=\frac{31-41}{2}=-5$ غ ق ق

$\Rightarrow$ جوز: ۳۶ ساعت ; فرهاد: ۴۵ ساعت

ساعت ۳۶

(۲)