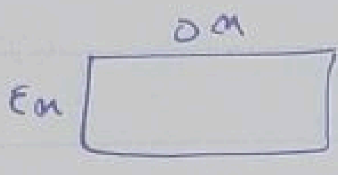
یازدهم دختران C

زهرا آقایی

Subject: Date:

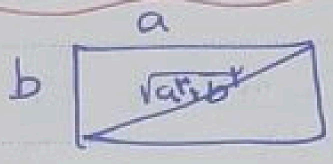
۱)



$$\frac{\text{طلایی}}{\text{اولیه}} = \frac{\left(\frac{1+\sqrt{5}}{2} \times 4m\right) 4m}{5m \times 4m} = \frac{2+2\sqrt{5}}{5}$$

$$\%40 + \%40\sqrt{5} = 4(1+\sqrt{5})$$

۲)



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

$$\left(\frac{1+\sqrt{5}}{2}\right)^2 \quad \frac{a^2+b^2}{a^2} \quad \text{توان ۲} \leftarrow$$

$$1+\frac{b^2}{a^2} = \frac{6+2\sqrt{5}}{4} \Rightarrow \left(\frac{b}{a}\right)^2 = \frac{6+2\sqrt{5}}{4} - 1$$

$$\left(\frac{a}{b}\right)^2 = \frac{2+2\sqrt{5}}{4} = \frac{1+\sqrt{5}}{2} \qquad \left(\frac{a}{b}\right)^2 = \frac{2}{1+\sqrt{5}}$$

$$\left(\frac{a}{b}\right)^2 = \frac{2}{1+\sqrt{5}}$$

۳)

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

توان ۲

$$2a^2+4a = 4-12a+9a^2$$

$$7a^2-16a+4 = 0 \qquad \Delta = (-16)^2 - 4\times7\times4 = \sqrt{144} = 12$$

$$a = \frac{16 \pm 12}{14} \qquad a = 2 \ ✗$$

$$a = \frac{2}{7} \ ✓ \to \frac{a+1}{9} = ۴٫۵$$

4)

$$\frac{\sqrt{x+1}}{\sqrt{x-1}+3} - \frac{\sqrt{x+1}}{3-\sqrt{x-1}} = \frac{x-1}{\sqrt{x-1}}$$

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

$$\sqrt{x+1}\left(-\frac{2\sqrt{x-1}}{9-(x-1)}\right) = \sqrt{x-1} \to -\frac{2\sqrt{x+1}}{10-x} = 1$$

$$2\sqrt{x+1} = -10+x \to 4(x+1) = x^2-20x+100$$

$$x^2-24x+96=0 \to \Delta = (-24)^2 - 4\times 96 = 192 \quad x = \frac{24\pm\sqrt{192}}{2}$$

$$12 \pm 4\sqrt{3}$$

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5)

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

$$\frac{2-\sqrt{2-x}-\sqrt{2-x}-2}{(2+\sqrt{2-x})(2-\sqrt{2-x})} = \frac{2-x}{5\sqrt{2-x}}$$

$$\frac{-2\sqrt{2-x}}{4-(2-x)} = \frac{2-x}{5\sqrt{2-x}} \Rightarrow -10(2-x) = (2+x)(2-x)$$

$$-20+10x = 4-x^2$$

$$x^2+10x-24=0$$

$$(x+12)(x-2)$$

معادله ریشه(+ ندارد $\leftarrow -12 \quad 2$

غ ق ق

۶)

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

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

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

$$160t^2=18t+9\to 160t^2-18t+9$$

$$t=\frac{18\pm\sqrt{(-18)^2-4(160)(-9)}}{2\times 160}$$

$$t=\frac{18\pm 6\sqrt{169}}{2\times 160}\to t=-\frac{3}{16}\to x^2-x+\frac{3}{16}=0$$

$$t=\frac{3}{10}\to x^2-x-\frac{3}{10}=0$$

$$1+1=\boxed{2}$$

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۷)

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

$$-x^2+6x-8\geq 0\to x^2-6x+8\leq 0\quad (x-2)(x-4)\leq 0$$

$$2\leq x\leq 4\ (\mathrm{I})$$

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

$$(x-4)(25-x^2)\geq 0$$

$x\leq -5$ یا $4\leq x\leq 5$ (II)

$$(\mathrm{I})\cap(\mathrm{II})\to x=4\to\sqrt{4+\sqrt{0}}+\sqrt{16+0}=$$

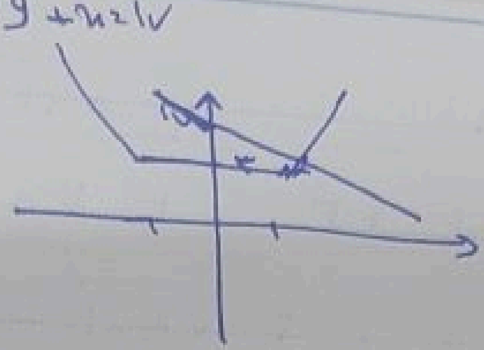
$$4+2=4+2\ ✓$$

$$x=4$$

(۸

$y = |x+2| + |x-1|$

$3y + x = 17$



$A \begin{vmatrix} 2 \\ 5 \end{vmatrix} \qquad B \begin{vmatrix} -4 \\ 7 \end{vmatrix}$

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

(۹

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

$\sqrt{(x-2)^2} = |x-2| \to \begin{array}{c|c} \multicolumn{2}{c}{2} \\ \hline -x+2 & x-2 \end{array}$

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

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

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

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

(۱۰

$x \Rightarrow \frac{1}{x}$ عکس

$\frac{1}{x} + \frac{1}{x+9} = \frac{1}{20}$

فرض $x + 9 = \frac{1}{x+9}$

$\frac{x + x + 9}{x(x+9)} = \frac{1}{20} \to \frac{2x+9}{x^2+9x} = \frac{1}{20}$

$40x + 180 = x^2 + 9x \qquad x^2 - 31x - 180 = 0$

$x = \frac{31 \pm \sqrt{(31)^2 - 4(-180)}}{2}$ $\to 41$

$x = 36$ ✓

$x = -5$ غ ق ق