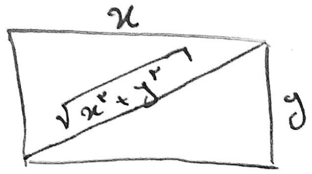
۸/۵

هلیا غفاری 11B

(۲)



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

۲

$$6+2\sqrt{5}$$

توان ۲ → $4(x^2+y^2) = x^2(1+5+2\sqrt{5}) \to 4x^2+4y^2 = 6x^2+2\sqrt{5}x^2$

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

(۳)

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

توان 2 → $2a^2+4a = 4+9a^2-12a \to 7a^2-16a+4=0$

۲

$$a^2-16a+28=0 \to (a-2)(a-14)=0 \to a=\frac{14}{7}, \frac{2}{7} = 2, \frac{2}{7} \;\star$$

زیر رادیکال ≥0 → $2a^2+4a \geq 0$ →

	-2		0	
+		−		+

برقرار

$\sqrt{2a^2+4a} = \underbrace{2-3a}$ → $2-\frac{6}{7} \geq 0$ ✓ و $2-6 < 0$ ✗

جواب √ باید مثبت باشد

$$\Rightarrow a = \frac{2}{7} \qquad \frac{a+1}{a} = \frac{\frac{2}{7}+1}{\frac{2}{7}} = \frac{\frac{9}{7}}{\frac{2}{7}} = \frac{9}{2} = 4/5$$

(۴)

$$\frac{\cancel{3\sqrt{x+1}} - \sqrt{x^2-1} - \sqrt{x^2-1} \cancel{-3\sqrt{x+1}}}{10-x} = \frac{-2\sqrt{x^2-1}}{10-x}$$

۰/۵

$$\frac{-2\times\cancel{\sqrt{x-1}}\times\sqrt{x+1}}{10-x} = \cancel{\sqrt{x-1}} \Rightarrow -2\sqrt{x+1} = 10-x$$

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

↳ $2\sqrt{x+1} = x-10$

→ $x^2-24x+96=0$

→ $x = 12\pm4\sqrt{3}$

$x \geq 10$ پس $12-4\sqrt{3}$ ✗

و معادله یک ریشه (۱) دارد

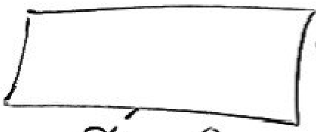
توان ۲

$$\Rightarrow [illegible]\sqrt{x+1} = \frac{x-10}{2} \longrightarrow 4x+4 = \cancel{x^2+100-20x}$$

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

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

→ $x^2+10x-24=0$ { $x=2$ → مخرج را صفر کند ؛ $x=-12$ → ریشه منفی است }



x' ۵

$y^2 = \cdot \quad \frac{x'}{2} = \frac{\sqrt{5}+1}{2} \to x = 2\sqrt{5}+2$ (۱)

(۲)

$$\frac{S'}{S} = \frac{4\times x'}{4\times 5} = \frac{2(\sqrt{5}+1)}{5}$$

$$\frac{1}{x^2} + \frac{1}{(1-x)^2} = \frac{160}{9}$$ (۶)

(۵)

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

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

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

۷) ۲

1) $-x^3+4x^2+25x-100 \geq 0 \to x \in [-\infty, -5] \cup [4, 5]$

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

3) $x + \sqrt{-x^3+4x^2+25x-100} \geq 0 \quad x \geq 0$

4) $x^2 + \sqrt{-x^2+6x-8} \geq 0 \to$ همواره مثبت

$x+2 \geq 0 \to x \in [-2, +\infty)$

$x=4 \to 2+4=6$

تنها یک جواب دارد

۸) ۲

-2		1	
$-6x-3 = 17-x$ $(-4, 7)$	$x=8$ X	$6x+3 = 17-x$ $(2, 5)$	

$AB = 3\sqrt{10}$

۹) ۲

$|x-2| = \frac{1}{2}x+2$

$A(0,2) \quad B(2,0) \quad C(8,6)$

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

$BC = 6\sqrt{2}$

$$\frac{1}{x} + \frac{1}{x+9} = \frac{1}{20} \qquad \frac{20(x+9)+x(20)}{20(x)(x+9)} = x(x+9)$$ (۱۰)

(۲)

$20x+180+20x-x^2-9x = 0$

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

$x = 36$ و -5