یازدهم پسر B

مفعولی

۱ـ

$$\frac{x}{4} = \frac{\sqrt{5}+1}{2} \qquad x = 2(\sqrt{5}+1)$$

$$\frac{\text{ر طلایی}}{\text{ر اولیه}} = \frac{4x}{4\times5} = \frac{2(\sqrt{5}+1)}{5} = 0.4(\sqrt{5}+1) = \frac{4\sqrt{5}}{10} + \frac{4}{10} = \frac{4\sqrt{5}+4}{10}$$

۲ـ

$$\frac{\sqrt{x^2+y^2}}{y} = \frac{1+\sqrt{5}}{2} \xrightarrow{\text{توان ۲}} \frac{x^2+y^2}{y^2} = \frac{6+2\sqrt{5}}{4}$$

$$1+\frac{x^2}{y^2} = \frac{6+2\sqrt{5}}{4}$$

$$1+\left(\frac{x}{y}\right)^2 = \frac{6+2\sqrt{5}}{4} \Rightarrow \left(\frac{x}{y}\right)^2 = \frac{2+2\sqrt{5}}{4}$$

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

۳ـ

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

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

$$7a^2-16a+4=0$$

$$\frac{16\pm\sqrt{144}}{14} \quad \frac{4}{14} = \frac{2}{7}, \quad 2 \text{ غ ق ق}$$

$$\frac{\frac{2}{7}+1}{\frac{2}{7}} = \frac{\frac{9}{7}}{\frac{2}{7}} = \frac{9}{2} = 4.5$$

۴ـ

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

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

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

$$4(x+1) = x^2-20x+100 \Rightarrow x^2-24x+96=0$$

~~$\frac{24\pm\sqrt{576-416}}{2}$~~ ~~$\frac{24\pm4\sqrt{10}}{2}$~~ ~~$12\pm2\sqrt{10}$~~ ~~$12-2\sqrt{10}$ غ ق ق~~ ~~$12+2\sqrt{10}$ ق ق~~

$$\frac{24\pm\sqrt{576-384}}{2}$$

۱ ریشه

$$\frac{24+8\sqrt{3}}{2} \text{ ق ق} \qquad \frac{24-8\sqrt{3}}{2} \text{ غ ق ق}$$

-۵

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

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

$(\sqrt{2-x})(\sqrt{2+x})$

$-10 = 2+x$

$x=-12$ ← ۰ ریشه مثبت دارد

-۶

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

$9-18x+9x^2+9x^2 = 160x^4-320x^3+160x^2$

$160x^4-320x^3+142x^2-18x+9=0$

$S=-\frac{b}{a} = \frac{320}{160} = 2$

مجموع ریشه‌ها

-۷

$-x^2+6x-8 \geq 0$

$$\frac{-6 \pm \sqrt{36-32}}{-2} \begin{cases} 2 \\ 4 \end{cases}$$

2, 4: $-$ | $+$ | $-$ (1)

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

-1	4	25	-100
-1	0	25	0

$(x-4)(-x^2+25)$, $x = 5, -5$

-5, 4, 5: $+$ | $-$ | $+$ | $-$ (2)

(1) ∩ (2) ⇒ $\{4\}$

$\sqrt{4}+\sqrt{16} = 6$

$x=4$ ← (1)

-۸

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

$y=-\frac{1}{3}x+\frac{17}{3}$

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

$\frac{7}{3}x = \frac{14}{3}$

$x=2$ $y=5$

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

$-x-2-x+1$

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

$-\frac{5}{3}x = \frac{20}{3}$

$x=-4$ $y=7$

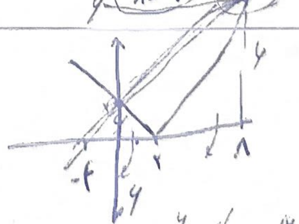
-۹

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

2: $2-x$ | $x-2$

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

$\frac{x}{2}=4$ $x=8$



$$S = \frac{12\times 6}{2} - \left(\frac{6\times 6}{2}+\frac{6\times 2}{2}\right) = 12$$

۱۰-

$$\frac{۱}{x} + \frac{۱}{x+۹} = \frac{۱}{۲۰}$$

$$۲۰x + ۱۸۰ + ۲۰x = x^۲ + ۹x \Longrightarrow x^۲ - ۳۱x - ۱۸۰ = ۰$$

$$(x - ۳۶)(x + ۵) \Longrightarrow x = ۳۶$$

$$\begin{array}{cc} \downarrow & \downarrow \\ ۳۶ & -۵ \end{array}$$

غ ق ق