

Subject:

Year: 04 Month: 7 Date: 20

آبشار کرمزاد - یازدهم فصل - شب ۲۰

$$\omega) f = f(\underbrace{r, r}(n, \omega))(\underbrace{r, n-r}(m, r))(-1, r) \quad \boxed{m=2} \quad \boxed{n=2} \checkmark$$

سوال ۱

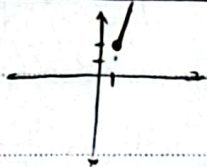
$$n-r=n \rightarrow n-r-n=0 \quad \begin{cases} n=2 \checkmark \\ n=-1 \text{ غلط} \end{cases}$$

$$b) f = f(\underbrace{-1, 1}(a, m-1))(\underbrace{r, r}(a+r, n))(\underbrace{m, r}(n, 2))$$

$$\rightarrow \boxed{m=2} \quad \boxed{a=-1} \quad (a, 1) \quad (1, n) \Rightarrow \boxed{n=2} \checkmark$$

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$$f(x) = \begin{cases} x-1 & : x \geq 1 \\ x+a & : x < 1 \end{cases}$$



$$f(1) = 2$$

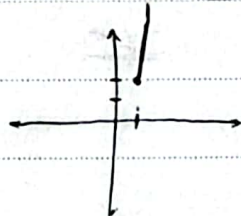
سوال ۵

$$\rightarrow 1+a \leq 2$$

$$\rightarrow \boxed{a \leq 1} \checkmark$$

$$f(x) = \begin{cases} x-1 & : x \geq 1 \\ ax+a-1 & : x \leq 0 \end{cases}$$

$$a > 0$$



$$f(0) = a-1 \rightarrow a-1 < 2$$

$$a < 3$$

سوال ۱

$$\Rightarrow 0 < a < 3$$

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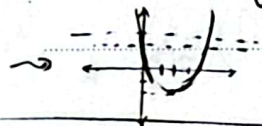
$$\omega) y = x^r + r \rightarrow x_1^r + r = x_2^r + r \rightarrow x_1^r = x_2^r \rightarrow x_1 = x_2 \checkmark \text{ یکتا بودن } x$$

$$\rightarrow x = y^r + r \rightarrow y^r = x-r \rightarrow \boxed{y = \sqrt[r]{x-r}}$$

سوال ۱

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$$b) x^r - r x + r = y \rightarrow x_1^r - r x_1 + r = x_2^r - r x_2 + r \rightarrow x_1(x_1 - r) = x_2(x_2 - r)$$



$$\sim x_1 \neq x_2 \text{ یکتا نیست } x$$

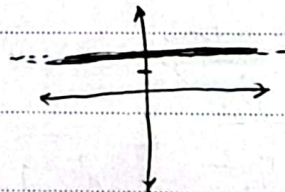
$$\omega) y = \frac{rx+1}{x-r} \quad \text{یکتا بودن } x \quad \sim \quad \sqrt{\text{یکتا بودن } x} \quad x = \frac{ry+1}{y-r}$$

سوال ۱

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$$\rightarrow y = \frac{rx+1}{x-r}$$

$$b) y = \frac{rx+r}{x+r} = \frac{r(x+r)}{x+r} = r \Rightarrow y=r$$



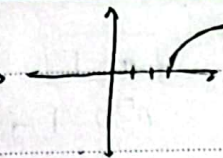
$$\Rightarrow x \text{ یکتا نیست}$$

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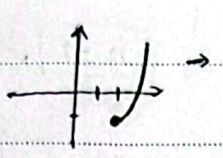
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ا) $y = \sqrt{x-2} \rightarrow$  $\rightarrow \overline{w} \cdot \overline{w} \rightarrow (x = \sqrt{y-2})^2 \rightarrow x^2 = y-2$ (سوال)
 $\rightarrow \boxed{y = x^2 + 2}$ (5)

ب) $y = x^2 - 2x + 2, x \in [1, +\infty)$

$y \rightarrow (x-1)^2 + 1 \rightarrow$  $\rightarrow \overline{w} \cdot \overline{w} \rightarrow \lambda = (y-1)^2 + 1 \rightarrow \lambda + 1 = (y-1)^2$
 $y-1 = \pm \sqrt{\lambda+1} \rightarrow \boxed{y = \sqrt{\lambda+1} + 1, x \in [1, +\infty)}$

$f(x) = x + \sqrt{x} - \frac{1}{x} + \frac{1}{x} \rightarrow (\sqrt{x} + \frac{1}{x})^2 - \frac{1}{x} = y \rightarrow (\sqrt{x} + \frac{1}{x})^2 = y + \frac{1}{x}$ (سوال)

$D_f = (0, +\infty) \rightarrow f(x) = ax + b - \sqrt{x-c} \quad (\sqrt{x} = \sqrt{y + \frac{1}{x} - \frac{1}{x}})^2$

$a+2b+c=?$

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

$\rightarrow x = y + \frac{1}{x} + \frac{1}{x} - \sqrt{y + \frac{1}{x}}$

$a=1 \quad b=\frac{1}{x} \quad c=\frac{1}{x}$

$f^{-1}(x) = x + \frac{1}{x} - \sqrt{x + \frac{1}{x}}$

$y = \frac{x}{\sqrt{x^2-2}} \rightarrow \frac{x_1}{\sqrt{x_1^2-2}} = \frac{x_2}{\sqrt{x_2^2-2}} \rightarrow \frac{x_1^2}{x_1^2-2} = \frac{x_2^2}{x_2^2-2} \rightarrow x_1^2 \cdot x_2^2 - 2x_1^2 = x_1^2 x_2^2 - 2x_2^2$ (سوال)

$\rightarrow 2x_1^2 = 2x_2^2 \rightarrow x_1 = \pm x_2 \rightarrow x_1 = x_2$

عن $\overline{w} \cdot \overline{w} \leftarrow$ $\sqrt{x^2-2}$ $\rightarrow$ $\sqrt{x^2-2} = \frac{x}{y} \rightarrow x = y\sqrt{x^2-2}$

$x = \frac{y}{\sqrt{y^2-2}} \rightarrow x^2 = \frac{y^2}{y^2-2} \rightarrow x^2 y^2 - 2x^2 = y^2 \rightarrow y^2 - x^2 y^2 = 2x^2 \rightarrow y^2(1-x^2) = 2x^2$ (5)

$\rightarrow y^2 = \frac{2x^2}{1-x^2} \rightarrow y = \pm \frac{\sqrt{2}x}{\sqrt{1-x^2}} \Rightarrow y = \frac{\sqrt{2}x}{\sqrt{1-x^2}}$

$g(x) = \sqrt{x-1} \rightarrow \sqrt{x-1} = -\frac{r}{a} \rightarrow \sqrt{x} = \frac{r}{a} \rightarrow x = \frac{r^2}{a^2}$ (سوال)

$g^{-1}(-\frac{r}{a}) = \frac{r^2}{a^2}$

$f^{-1}(x) = \frac{x}{1+|x|}$

$f(-\frac{r}{a}) = \frac{-\frac{r}{a}}{1+\frac{r}{a}} = \frac{-r}{a+r} = \frac{-r}{\frac{r}{a}} = \boxed{\frac{-r^2}{r}}$

$g^{-1}(-\frac{r}{a}) + f(-\frac{r}{a}) = \frac{r^2}{a^2} - \frac{r}{a} = \boxed{\frac{-r^2}{a^2}}$ ✓

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

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

PARAN $\sqrt{x^2+1} + x^2 + 1 = 12 \rightarrow x^2 + 2 = \frac{1}{g^{-1}(12)} \rightarrow \boxed{12}$