

$$x^2 - 11x + 14 = 0 \rightarrow x^2 - 11x + 14 = 0 \rightarrow x_1 = 2, x_2 = 9$$

$$x^2 - 11x + 14 = (x-2)(x-9) \rightarrow x^2 - 11x + 14 = (x-2)(x-9)$$

$$\rightarrow \text{interval} \rightarrow x \in [2, 9] \rightarrow \alpha = [2, 9]$$

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

1, 5

$$\alpha \in [-f_1 + \alpha]$$

$$y = 3x + k \rightarrow y - k = 3x \rightarrow x = \frac{y-k}{3} \rightarrow f(x) = \frac{x-k}{3}$$

$$\frac{y-k}{3} = x \rightarrow y-k = 3x \rightarrow k = -1 \rightarrow f(x) = 3x - 1$$

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$$\text{الف) } f(v) = 3(v) - 1 = 11$$

$$\text{ب) } f(3x-1) = 3(3x-1) - 1 =$$

$$9x - 3 - 1 = 9x - 4$$

اگر می تواند منبر باشد چون $f(u)$ تابع است.

$$(2a, a) \rightarrow \text{دری و درون تابع} \Rightarrow (a, 2a) \rightarrow \text{تابع } f(u) \rightarrow 2a' = \frac{a^2}{a-1} \rightarrow 2 = \frac{a}{a-1}$$

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$$\rightarrow 2a - 2 = a \rightarrow a = 2$$

$$f^{-1}(u) = \{(a, 2), (v, 4), (2, v), (4, 9)\}$$

$$\text{الف) } f^{-1}(u) \xrightarrow{x=2} 3 \xrightarrow{f(x)} \Delta$$

$$u = v \rightarrow 4 \rightarrow v$$

$$2 \rightarrow v \rightarrow 2$$

$$4 \rightarrow 9 \rightarrow 4$$

$$\rightarrow f \circ f^{-1} = \{(a, a), (v, v), (2, 2), (4, 4)\}$$

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$$\text{ب) } f(3) = \Delta \xrightarrow{f^{-1}(\Delta)} 3$$

$$u = 4 \rightarrow v \rightarrow 4$$

$$v \rightarrow 2 \rightarrow v$$

$$9 \rightarrow 4 \rightarrow 9$$

$$\rightarrow f^{-1} \circ f = \{(3, 2), (4, 4), (v, v), (9, 9)\}$$

$$g^{-1}(u) = \{(2, 3), (4, 1), (\Delta, 9)\}$$

$$\text{ج) } g^{-1}(2) = 3 \xrightarrow{f(3)} \Delta$$

$$u = 4 \rightarrow \Delta \rightarrow x$$

$$\Delta \rightarrow 9 \rightarrow 4$$

$$\rightarrow f \circ g^{-1} = \{(2, \Delta), (\Delta, 4)\}$$

Arman

د) $f(n) = \begin{cases} 3 & n=1 \\ 4 & n=2 \\ 5 & n=3 \end{cases} \quad g^{-1}(n) = \begin{cases} 1 & n=1 \\ 2 & n=2 \\ 3 & n=3 \end{cases}$

$n = 1 \rightarrow 3 \rightarrow 4$
 $n = 2 \rightarrow 4 \rightarrow 5$
 $n = 3 \rightarrow 5 \rightarrow 6$

$g^{-1}(n) = \{(1,1), (2,2), (3,3)\}$

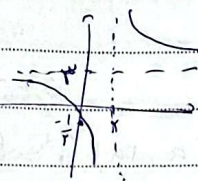
$f \circ g^{-1}: g^{-1}(1) \rightarrow 3 \rightarrow 4$
 $g^{-1}(2) \rightarrow 4 \rightarrow 5$
 $g^{-1}(3) \rightarrow 5 \rightarrow 6$

$h = \{(1,1), (2,2), (3,3)\} \rightarrow h = \{(1,1), (2,2)\}$

جواب نام: $n=2 \rightarrow n=3$

جواب ای: $n=3 \rightarrow n=4$

$n=4 \rightarrow y = \frac{1}{2}$



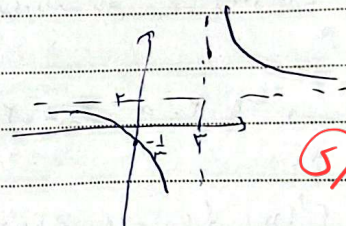
چون یک به یک است معکوس نیز برقرار است.

$n = -\frac{2y+1}{y-3} = \frac{2y+1}{y-3}$
 $\rightarrow y = \frac{2n+1}{n-3}$

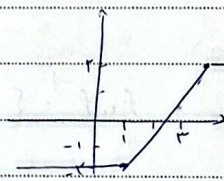
$n=0 \rightarrow y = -\frac{1}{3}$

جواب نام: $n=3$

جواب ای: $n=2$



$\begin{cases} n-1+3-n=2 & n \geq 3 \\ -n+1+n-3=-2 & n \leq 1 \\ n-1+n-3=2n-4 & 1 < n < 3 \end{cases}$



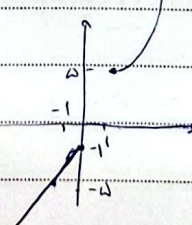
$[a, b], [1, 3]$

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

$y = 2x+4 \rightarrow n=1 \rightarrow y=6$

$y = 2x-1 \rightarrow n=0 \rightarrow y=-1$

$n=1 \rightarrow y=6$



توجه: یک به یک است معکوس نیز برقرار است.

$\begin{cases} y^3+4 & y \geq 1 \\ 4y-1 & y < 1 \end{cases} \rightarrow n-4 = y^3 \rightarrow y = \sqrt[3]{n-4} \quad n \geq 5$
 $4y-1 = n \rightarrow 4y = n+1 \rightarrow y = \frac{n+1}{4} \quad n < 5$

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$$n = y^r = \frac{(y+1)^r}{y+r} \cdot \frac{y^r(y+1)^r - (y+1)^r}{y+r} = \frac{y^r + ry^r - (y^r + 1 + ry^r + ry)}{y+r} = \frac{y^r + ry^r - y^r - 1 - ry^r - ry}{y+r} = \frac{-1 - ry}{y+r}$$

$$f^{-1}(n) = \frac{-ry-1}{y+r} \cdot \frac{y}{r} = \frac{-y(-ry-1)}{ry+r} \cdot \frac{y}{r} = \frac{-y(-ry-1)-y}{r(-ry)+y} = \frac{1}{r} = \boxed{\frac{1}{r}} \quad \text{⑤}$$

$$y = \frac{n}{ry+1} \xrightarrow{f^{-1}(n)} n = \frac{y}{ry+1} \rightarrow nry+n = y \rightarrow nry+n-y=0$$

$$y = \frac{1 \pm \sqrt{1-4(n)(n)}}{2n} = \frac{1 \pm \sqrt{1-4n^2}}{2n} \quad \text{⑤}$$

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