

$$x^2 - 12x + 14 = 0 \rightarrow x^2 - 12x + 14 = 0 \rightarrow x = 2 \rightarrow x^2 - 12x + 14 = 0$$

$$x^2 - 12x + 14 = (x-2)(x+6) \rightarrow x^2 - 12x + 14 = (x-2)(x+6)$$

$$\rightarrow \text{range} \rightarrow x \rightarrow \alpha = [-2, 2]$$

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

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

$$\text{الف) } f(v) = 3(v) - 1 = 11 \quad \text{ب) } f(3x-1) = 3(3x-1) - 1 =$$

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

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

$$(2a, a) \rightarrow \text{روی داشتن تابع} \Rightarrow (a, 2a) \rightarrow \text{تابع } f(u) \rightarrow 2a = \frac{a^2}{a-1} \rightarrow 2 = \frac{a}{a-1}$$

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

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

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

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

$$2 \rightarrow v \rightarrow 2$$

$$4 \rightarrow 9 \rightarrow 4$$

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

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

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

$$v \rightarrow 2 \rightarrow v$$

$$9 \rightarrow 4 \rightarrow 9$$

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

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

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

$$u = 4 \rightarrow 1 \rightarrow x$$

$$a \rightarrow 9 \rightarrow 4$$

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

Arman

د) $f(n) = \sqrt[3]{n} \rightarrow g^{-1}(n)$

$$\left. \begin{array}{l} n = 4 \rightarrow \sqrt[3]{4} = x \\ \sqrt[3]{4} \rightarrow 2 \rightarrow 3 \\ 4 \rightarrow 4 \rightarrow 1 \end{array} \right\} \rightarrow g^{-1} \circ f = \{(3, 1), (1, 3), (4, 1)\}$$

$g^{-1}(n) = \{(1, 2), (3, 4), (5, 4)\}$

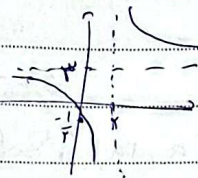
$$f \circ g^{-1}: \left. \begin{array}{l} g^{-1}(1) \rightarrow 2 \rightarrow f(2) = 4 \\ 2 \rightarrow 4 \rightarrow 1 \\ 5 \rightarrow 4 \rightarrow 1 \end{array} \right\} \rightarrow f \circ g^{-1} = \{(1, 4), (3, 1), (5, 1)\}$$

$$\frac{h}{f \circ g^{-1}} = \left\{ \left(1, \frac{1}{4}\right), \left(3, \frac{1}{1}\right), \left(5, \frac{1}{1}\right) \right\} \rightarrow \frac{h}{f \circ g^{-1}} = \left\{ \left(1, \frac{1}{4}\right), \left(3, \frac{1}{1}\right) \right\}$$

جواب نام: $n - 2 \leq n \rightarrow n \geq 2$

جواب ایمن: $\rightarrow 2 = 2$

$n \leq 0 \rightarrow y = -\frac{1}{2}$



چون یک به یک است معکوس نیز برقرار است.

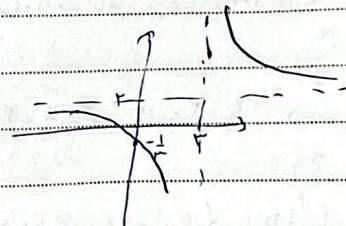
$$n = -\frac{2y+1}{y-3} = \frac{2y+1}{y-3}$$

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

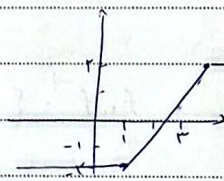
$n \leq 0 \rightarrow y = -\frac{1}{2}$

جواب نام: $3 \rightarrow$ ریشه خارج

جواب ایمن: 2



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



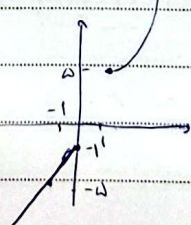
$[a, b], [1, 3]$

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

$y = 2x+4 \rightarrow n=1, y=5$

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

$n=1 \rightarrow y = -5$



تابع یک به یک، معکوس نیز برقرار است.

$$\begin{cases} y^3+4 & y \geq 1 \\ 4y-1 & y < 0 \end{cases} \rightarrow \begin{cases} n-4 = y^3 \rightarrow y = \sqrt[3]{n-4} \\ 4y-1 = n \rightarrow 4y = n+1 \rightarrow y = \frac{n+1}{4} \end{cases}$$

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

$$f^{-1}(u) = \frac{-x-1}{x+2} \cdot \frac{x}{x} = \frac{-x-1}{x+2} \rightarrow f^{-1}(-2) = \frac{-(-2)-1}{-2+2} = \frac{1}{0} = \boxed{\Delta}$$

$$y = \frac{n}{x^{r+1}} \xrightarrow{f^{-1}(n)} n = \frac{y}{y^{r+1}} \rightarrow ny^{r+1} = y \rightarrow ny^{r+1} - y = 0$$

$$y = \frac{1 + \sqrt{1 - f(n)(n)}}{r_n} = \frac{1 + \sqrt{1 - f(n)}}{r_n}$$