

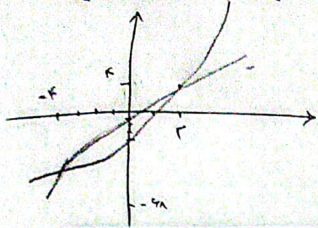
ب. اذخم خطه B

نشان دهید . 71

"نموده عکس"

مجموعه A را به گونه ای بنویسید تا به یک مجموعه تبدیل شود.

$$f_{n+1} = \begin{cases} n^2 - 4, & n > a \\ 12n - 4, & n \leq a \end{cases}$$



$$a^2 - 4 \geq 12a - 4$$

$$a^2 - 12a + 4 \geq 0 \Rightarrow (a^2 + 12a - 4a^2 - 1) - 24a + 24 + 4a^2 = 0$$

$$(a-2)^2 + 4(a^2 - 4a + 4) = (a-2)^2 + 4(a-2)^2$$

$$(a-2)^2(a-2+4) \Rightarrow (a-2)^2(a+2)^2 = 0$$

$$\underline{a \geq -2} \quad \underline{a \geq -2} \quad \underline{a \geq -2} \quad \underline{a \geq -2}$$

1

الف) $f(v)$

$$3(v) - 1 = 11$$

$$f(v) = 2 \Rightarrow f^{-1}(2) = v, \quad f_{n+1} = f_n + k$$

$$\Rightarrow f(f_{n+1})$$

$$3 \times 4 + k = 2 \\ k = -10$$

$$3(3n - 1) - 1 = 0 \Rightarrow 9n - 3 - 1 = 0 \Rightarrow$$

$$9n - 4 = 0$$

2

$$f_{n+1} = \frac{a^n}{n-1} \quad \text{نموده عکس} \quad A(a, a) \quad \text{نموده عکس} \quad (a, a)$$

$$f_a = \frac{a^r}{a-1} \Rightarrow f_a^r - f_a = a^r$$

$$a^r - f_a = 0$$

$$a(a-2) = 0$$

$$a = 0 \quad \times$$

$$a = 2 \quad \checkmark$$

3

$$g = f(2, 2), (1, 4), (9, 5) \quad \text{نموده عکس} \quad f^{-1} = f(2, 2), (9, 1), (5, 9)$$

$$f \circ f^{-1}$$

$$f(5, 5), (7, 7), (2, 2), (9, 9)$$

$$f = f(2, 5), (4, 7), (9, 2), (9, 9) \quad \text{نموده عکس} \quad f^{-1} = f(5, 2), (7, 4), (2, 9), (9, 9)$$

$$f \circ f^{-1}$$

$$f(3, 3), (4, 4), (7, 7), (9, 9)$$

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$$f \circ g^{-1}$$

$$f(2, 5), (5, 4)$$

$$g^{-1} \circ f$$

$$f(3, 9), (7, 2), (9, 1)$$

$$h = f(1, 2), (2, 4), (4, 1), (5, 1), \quad g = f(2, 1), (4, 3), (9, 5), \quad f = f(1, 4), (4, 1), (9, 5) \\ g^{-1} = f(1, 2), (3, 4), (5, 1)$$

$$\frac{h}{f \circ g^{-1}} = f(1, \frac{1}{2}), (2, \frac{1}{4}), (5, \frac{1}{5}) \Rightarrow f(1, \frac{1}{4}), (2, \frac{1}{4})$$

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$$f \circ g^{-1} = f(1, 4), (3, 1), (5, 0)$$

معدول می‌شود و به یک تابع معکوس تبدیل می‌شود و معکوس آن را می‌توان نوشت.

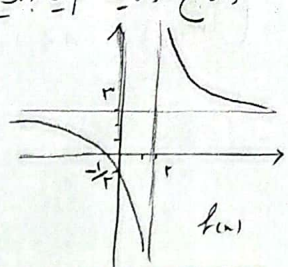
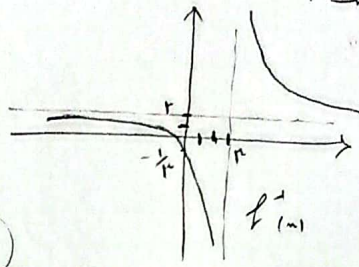
$$y = \frac{2n+1}{n-2}$$

$$\frac{an+b}{cn+d} \Rightarrow ad \neq bc \Rightarrow 2(-2) \neq 1 \Rightarrow -4 \neq 1$$

$$f^{-1} \Rightarrow y = \frac{2n+1}{n-2}$$

$$ad-bc = -4-1 = -5$$

نزود



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$$\frac{a}{c} = 2$$

$$\begin{cases} x=0 \\ y=-\frac{1}{2} \end{cases}$$

تابع $f: [a, b] \rightarrow \mathbb{R}$ را در نظر بگیرید. اگر f یک تابع یک به یک باشد، معکوس آن را می‌توان نوشت.

$$\begin{array}{ccc} 1 & 2 & 3 \\ -n+1+n-2 & m-1+n-2 & n-1-n+2 \\ -2 & m-2 & 2 \end{array}$$

$$\begin{cases} 2 & n > 3 \\ 2n-2 & 1 \leq n \leq 3 \\ -2 & n < 1 \end{cases}$$

$$\begin{aligned} y &= 2n-2 \\ 2n &= y+2 \\ n &= \frac{y+2}{2} \Rightarrow y = \frac{1}{2}n+2 \end{aligned}$$

$$\begin{cases} a=1 \\ b=2 \end{cases} \Rightarrow y = 2n-2$$

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$$f_{n+1} = \begin{cases} a^{n+2}, & n \geq 1 \\ f_n - 1, & n \leq 0 \end{cases} \Rightarrow R = [0, +\infty)$$

$$\begin{aligned} y &= 2n^2+2 & y &= 2n-1 \\ n^2 &= y-2 & 2n &= y+1 \\ n &= \sqrt{y-2} & n &= \frac{y+1}{2} \\ y &= 2n^2+2 & y &= \frac{n+1}{2} \end{aligned}$$

$$\begin{cases} \sqrt{n-2} & n \geq 2 \\ \frac{n+1}{2} & n \leq -1 \end{cases}$$

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$$(b) f^{-1}(x) = \frac{an+b}{cn+d} \Rightarrow f_{n+1} = n^2 - \frac{(n+1)^2}{n+2}$$

$$f_{n+1} = \frac{-2n-1}{n-2}$$

$$f^{-1}_{n+1} = \frac{-2y-1}{y+2}$$

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

$$f^{-1}(-2) = \frac{-2(-2)-1}{-2+2} = \frac{3}{0} = \infty$$

$$\begin{aligned} n^2 - \frac{(n^2+2n+1)}{n+2} &= \frac{n^2(n+2) - (n^2+2n+1)}{n+2} \\ &= \frac{n^3+2n^2-n^2-2n-1}{n+2} \\ &= \frac{n^3+n^2-2n-1}{n+2} \end{aligned}$$

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$$f_{n+1} = \frac{x}{n^2+1} \Rightarrow n = \frac{y}{y^2+1} \Rightarrow n y^2 + n = y$$

$$y = \frac{1 \pm \sqrt{1-4n^2}}{2n}$$

$$f^{-1}_{n+1} = \frac{1 \pm \sqrt{1-4n^2}}{2n}$$

$$Df^{-1}_{n+1} = [-\frac{1}{2n}, \frac{1}{2n}] - \{0\}$$

نقطه $(0,0)$ را در نظر بگیرید. اگر f یک تابع یک به یک باشد، معکوس آن را می‌توان نوشت.

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