

۱۷, ۲۵

پایین مشاهده کردی

کلیف که ۱۱

ما از هم دست برداریم

① هر یک از ضرایبها از ضرایبهای یک به یک

$$f(n) = \begin{cases} n^4 - 4 \cdot n^3 + 6 \cdot n^2 - 4 \cdot n + 1 \\ 12n - 2 \cdot n^2 + n^4 \end{cases}$$

۱, ۵

$$n^4 - 4 = 12n - 2$$

$$n^4 - 12n + 14 = 0 \rightarrow n^4 - 4n^3 + 4n^2 - 16n + 14 = 0$$

$$n(n-2)(n+2) - 1(n-2) = 0$$



$$(x-2)(x^2+2x-1)=0 \rightarrow (x-2)(x+2)(x-1)=0$$

$$\begin{cases} \rightarrow x=2 \\ \rightarrow x=-2 \\ \rightarrow x=1 \end{cases}$$

$$a \in (-\infty, -\varepsilon] \cup [\varepsilon, +\infty)$$

$a \in [-\varepsilon, +\varepsilon]$

$$\begin{aligned} f(x) &= 3x+k \\ f^{-1}(r) &= x \end{aligned} \rightarrow f(x)=r \rightarrow 3x+k=r$$

$$k=-10 \rightarrow f(x)=3x-10$$

الف) $f(v) = v \times 3 - 10 = 11$

ب) $f(f(x)) = f(3x-10) = 3(3x-10) - 10 = 9x - 40$

A(1/a/a)

$$f(x) = \frac{ax}{x-1} \rightarrow y = \frac{ax}{x-1} \rightarrow ax = yx - y$$

$$(a-y)x = -y \rightarrow x = \frac{y}{y-a}$$

$$f^{-1}(ra) = \frac{ra}{ra-a} = a \rightarrow ra = a^2$$

$$a^2 - ra = 0 \rightarrow \begin{cases} a=0 \text{ (X)} \\ a=r \text{ (✓)} \end{cases}$$

$$f = \{(r, \omega), (r, v), (v, r), (q, q)\}$$

$$g = \{(r, r), (r, q), (q, \omega)\}$$

الف) $f \circ f^{-1} =$

$$f \circ f^{-1} = \{(\omega, \omega), (v, v), (r, r), (q, q)\}$$

$$f^{-1} = \{(\omega, r), (v, r), (r, v), (q, q)\}$$

$$\begin{aligned} \omega &\rightarrow r \rightarrow \omega \\ v &\rightarrow r \rightarrow v \\ r &\rightarrow v \rightarrow r \\ q &\rightarrow q \rightarrow q \end{aligned}$$

$$\varphi^{-1} = \{(\alpha, \beta), (\gamma, \delta), (\epsilon, \zeta), (\eta, \theta)\}$$

ب) $\varphi^{-1} \circ \varphi =$

$$\varphi^{-1} \circ \varphi = \{(\alpha, \alpha), (\beta, \beta), (\gamma, \gamma), (\delta, \delta)\}$$

$$\alpha \rightarrow \beta \rightarrow \alpha$$

$$\beta \rightarrow \gamma \rightarrow \beta$$

$$\gamma \rightarrow \delta \rightarrow \gamma$$

$$\delta \rightarrow \epsilon \rightarrow \delta$$

ج) $\varphi \circ g^{-1} = \{(\alpha, \beta), (\gamma, \delta)\}$

$$g^{-1} = \{(\alpha, \beta), (\gamma, \delta), (\epsilon, \zeta)\}$$

$$\alpha \rightarrow \beta \rightarrow \alpha$$

$$\gamma \rightarrow \delta \rightarrow \gamma$$

$$\epsilon \rightarrow \zeta \rightarrow \epsilon$$

د) $g^{-1} \circ \varphi = \{(\alpha, \beta), (\gamma, \delta), (\epsilon, \zeta)\}$

$$g^{-1} = \{(\alpha, \beta), (\gamma, \delta), (\epsilon, \zeta)\}$$

$$\alpha \rightarrow \beta \rightarrow \alpha$$

$$\beta \rightarrow \gamma \rightarrow \beta$$

$$\gamma \rightarrow \delta \rightarrow \gamma$$

$$\delta \rightarrow \epsilon \rightarrow \delta$$

$$\varphi = \{(\alpha, \beta), (\beta, \gamma), (\gamma, \delta)\}$$

$$g = \{(\alpha, \beta), (\beta, \gamma), (\gamma, \delta)\} \rightarrow g^{-1} = \{(\beta, \alpha), (\gamma, \beta), (\delta, \gamma)\}$$

$$h = \{(\alpha, \beta), (\beta, \gamma), (\gamma, \delta)\}$$

$$\varphi \circ g^{-1} = \{(\alpha, \beta), (\beta, \gamma), (\gamma, \delta)\}$$

$$\frac{h}{\varphi \circ g^{-1}} = \{(\alpha, \beta), (\beta, \gamma)\}$$

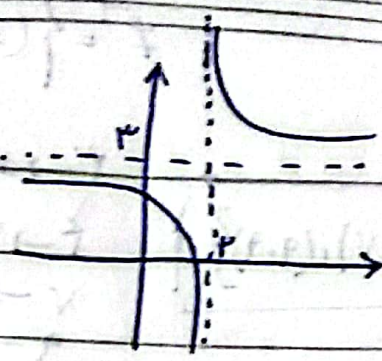
$$\alpha \rightarrow \beta \rightarrow \alpha$$

$$\beta \rightarrow \gamma \rightarrow \beta$$

$$\delta \rightarrow \epsilon \rightarrow \delta$$



$$y = \frac{kn+1}{n-k}$$



④

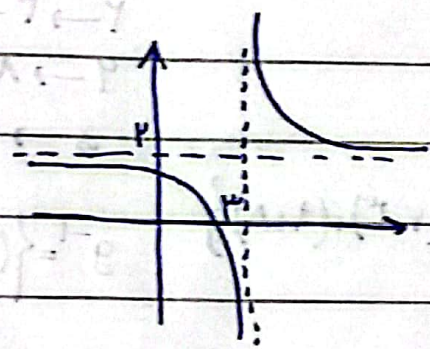
⑤

$$yn - ky = kn + 1 \rightarrow (y-k)n = ky + 1 \rightarrow n = \frac{ky+1}{y-k}$$



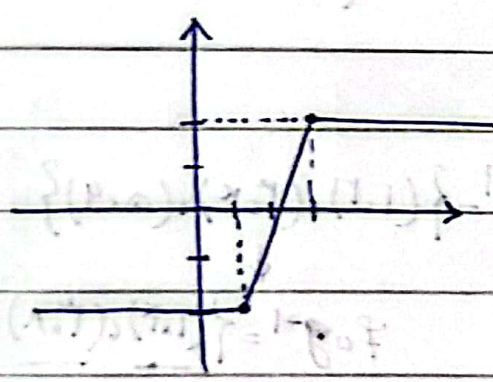
$$y = \frac{kn+1}{n-k}$$

$$y = \frac{kn+1}{n-k}$$



$$f(x) = |x-1| - |x-k|$$

$$\begin{array}{l|l|l} x < 1 & 1 < x < k & x > k \\ \hline 1-x+n-k & |x-1+x-k| & x-1-x+k = -1 \end{array}$$



تابع حالت در بازه $[1, k]$ است

⑤

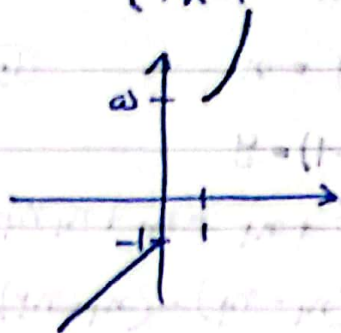
$$\begin{aligned} a &= 1 \\ b &= k \end{aligned}$$

← ضابطه تابع در طول این بازه: $f(x) = kn - k$

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

$$y = \frac{|x|}{k} + k$$

$$f(x) = \begin{cases} x^k + k & x \geq 1 \\ kx - 1 & x < 1 \end{cases}$$



① - ضابطه تابع در صورتی صحیح است
در دامنه که به یک باشد یا نه
② - برد آ را با اشتراک دو دامنه باشد

برای اینکه تابع به یک باشد است

$$\Rightarrow y = x^k + k \rightarrow x^k = y - k \rightarrow x = \sqrt[k]{y - k}$$

$$y = \sqrt[k]{x - k} \quad D_{f^{-1}} = R_f$$

$$R_f = [\omega, +\infty)$$

$$\Rightarrow y = kx - 1 \rightarrow y + 1 = kx \rightarrow x = \frac{y+1}{k} \rightarrow y = \frac{1}{k}x + \frac{1}{k}$$

$$D_{f^{-1}} = R_f$$

$$R_f = (-\infty, -1]$$

$$f^{-1}(x) = \begin{cases} \sqrt[k]{x - k} & x \geq \omega \\ \frac{x+1}{k} & x < -1 \end{cases}$$

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

$$f(x) = \frac{-kx - 1}{x+k} \rightarrow y = \frac{-kx - 1}{x+k} \rightarrow xy + ky = -kx - 1$$

$$x(y+k) = -ky - 1$$

$$x = \frac{-ky - 1}{y+k} \rightarrow y = \frac{(-kx - 1)(x+k)}{(x+k)x}$$

$$f^{-1}(x) \rightarrow a = -4, b = -1$$

$$c = 1, d = 4$$

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

$$f^{-1}(b) = f^{-1}(-2) = \frac{-2(-2)-1}{-2+2} = \underline{\omega}$$

$$f(x) = \frac{x}{x^2+1} \rightarrow y = \frac{x}{x^2+1} \rightarrow \text{بررسی کنید به یک یا دو جواب}$$

$$y_1 = y_2 \rightarrow \frac{x_1}{x_1^2+1} = \frac{x_2}{x_2^2+1} \rightarrow x_2 x_1^2 + x_1 = x_1 + x_1 x_2^2$$

$$x_2 x_1 (x_1 - x_2) - (x_1 - x_2) = 0$$

$$x_1 - x_2 = 0 \rightarrow x_1 = x_2$$

$$(x_1 - x_2)(x_1 x_2 - 1) = 0$$

$$x_1 x_2 - 1 = 0 \rightarrow x_1 x_2 = 1$$

$$f^{-1}(a) = \frac{1 \pm \sqrt{1-4a^2}}{2a} \quad |a| \leq \frac{1}{2}, a \neq 0$$

تابع یک به یک نیست و وارون پذیر نیست

