

19, 25

$$1 \quad n^3 - 12n + 14 \rightarrow (n^3 - 12n + 14) \rightarrow (a-2)(a+2) \neq 0 \quad (1)$$

$$2 \quad (n^3 - 12n + 14)(n+2) \Rightarrow a \neq -2$$

1, 25

$$5 \quad f(x) = 2 \Rightarrow f(x) = 12 + x = 2 \Rightarrow x = -10 \quad (2)$$

$$6 \quad f(11) \rightarrow f(11) = 12 + 11 = 23 \quad (3)$$

$$7 \quad f(f(x)) \rightarrow f(12 + x) = 12 + (12 + x) = 24 + x$$

$$9 \quad f(a) = \frac{a^2}{a-1} \Rightarrow f(a) = \frac{a^2}{a-1} \Rightarrow a^2 - f(a)(a-1) = 0 \Rightarrow a^2 - fa + f = 0 \quad (4)$$

$$10 \quad a(a-f) = 0 \Rightarrow \underline{a=0, a=f}$$

$$13 \quad f \circ f^{-1} \rightarrow f(f^{-1}(x)) = \{(1,1), (2,2), (3,3), (4,4)\} \quad (5)$$

$$15 \quad f^{-1} \circ f \rightarrow f^{-1}(f(x)) = \{(1,1), (2,2), (3,3), (4,4)\}$$

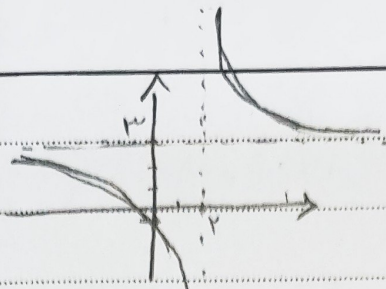
$$17 \quad f(g^{-1}(x)) \rightarrow \{(1,1), (2,2)\}$$

$$19 \quad g^{-1} \circ f \rightarrow g^{-1}(f(x)) = \{(1,1), (2,2), (3,3)\}$$

$$21 \quad f \circ g^{-1} \rightarrow f(g^{-1}(x)) = \{(1,1), (2,2), (3,3)\} \quad (6)$$

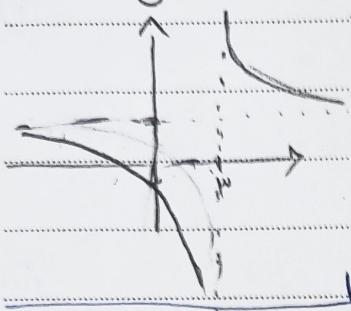
$$23 \quad \frac{h}{f \circ g^{-1}} \rightarrow \{(1, \frac{1}{2}), (2, \frac{1}{2})\} \quad (7)$$

$$y = \frac{km+1}{n-k} \quad \text{همبستگی}$$

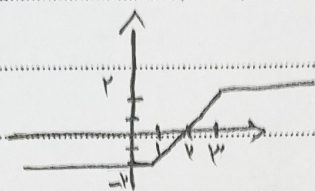


دارن یک است

$$n = \frac{ky+1}{y-k} \Rightarrow ny - km = ky+1 \Rightarrow y(n-k) = 1+km \Rightarrow y = \frac{1+km}{n-k}$$

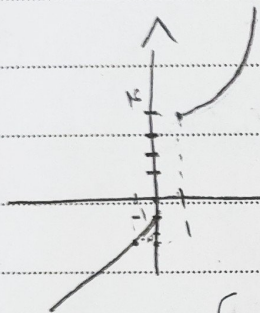


$$f(n) = |n-1| - |n-k| \rightarrow [5, 25]$$



$$\Rightarrow [ab] \subset [1, k]$$

$$1 \leq n \leq k: km-k \Rightarrow y = km-k \Rightarrow n = ky-k \Rightarrow y^{-1} = \frac{n+k}{k}$$



$$n > 1 \rightarrow y = n^k + k \rightarrow y > a$$

$$\Rightarrow \text{نقطه} \Rightarrow n = y^{\frac{1}{k}} + k \Rightarrow y^{-1} = \sqrt[k]{n-k}$$

$$n > a$$

$$\Rightarrow y^{-1} \begin{cases} n > a: \sqrt[k]{n-k} \\ n \leq -1: \frac{n+1}{k} \end{cases}$$

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

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

$$y^{-1} = \frac{-kn-1}{n+k} \Rightarrow a = -4, b = -1, d = 4, f(-1) = \frac{4-1}{+1}$$

$$n = \frac{y}{y^{r+1}} \Rightarrow ny^r + n = y \Rightarrow ny^r - y + n = 0 \quad (1,2) \quad (1,2)$$

$$\Rightarrow y^{-1} = \frac{1 \pm \sqrt{1 - 4n^r}}{2n} \xrightarrow[n \neq 0]{\text{chooses } y^{-1}} = \frac{2n}{1 + \sqrt{1 - 4n^r}} \quad , \quad n \in \left[-\frac{1}{4}, \frac{1}{4}\right]$$