

15/0

پیدا رسی

$$f(x) = \sqrt{x-1} - \frac{x}{x-1} \geq 0$$

10 $\frac{x-1}{x} - \frac{x}{x-1} \geq 0$ $\rightarrow x^2 - x + 1 - x^2 = -x + 1 \geq 0$ $\rightarrow x \leq 1$ $\rightarrow x \in (-\infty, 1]$

1 $x(x-1) \geq 0$ $\rightarrow x \leq 0$ or $x \geq 1$ $\rightarrow x \in (-\infty, 0] \cup [1, \infty)$

1 $f(x) = \frac{1}{x} - \frac{x}{x+1} \geq 0$ $\rightarrow \frac{x+1-x^2}{x(x+1)} \geq 0$ $\rightarrow \frac{-x^2+x+1}{x(x+1)} \geq 0$ $\rightarrow \frac{x^2-x-1}{x(x+1)} \leq 0$ $\rightarrow x \in (-\infty, -1] \cup [1, \infty)$

1 $x^2 + 3 \neq 0$ $\rightarrow x^2 \geq -3$ $\rightarrow x \in \mathbb{R}$

2 $f(x) = \sqrt{\frac{1}{x} - 1} \geq 0$ $\rightarrow \frac{1}{x} - 1 \geq 0$ $\rightarrow \frac{1-x}{x} \geq 0$ $\rightarrow x \in (-\infty, 0] \cup [1, \infty)$

1 $\frac{1}{x} - 1 \geq 0$ $\rightarrow \frac{1-x}{x} \geq 0$ $\rightarrow x \in (-\infty, 0] \cup [1, \infty)$

$x \geq -1$

18

2 $y = \sqrt{x-1} + \sqrt{y+1} \geq 0$

1 $y \geq 0$ $\rightarrow \sqrt{y+1} \geq \sqrt{x-1}$ $\rightarrow y+1 \geq x-1$ $\rightarrow y \geq x-2$ $\rightarrow x \leq y+2$

$y \geq 0$ $\rightarrow x \leq 2$

19

آسیا رسی

$$\sqrt{x^r - 1} \geq 0 \quad x \geq 1 \quad x \leq -1$$

نه

$$\sqrt{x^r - 1} + 1 \rightarrow \log_{x^r - 1} \rightarrow n - n - r$$

نه

دالاس

$$f(x) = \sqrt{r + ax - x^r} \geq 0 \quad [-b, b] \quad a + b \geq 0$$

$$\sqrt{-x^r + ax + r} \geq 0 \rightarrow -x^r + ax + r \geq 0 \rightarrow -x^r - 1 \geq 0 \rightarrow x \leq -1$$

$$-b^r - \frac{1}{r}b + r = 0 \rightarrow y = \sqrt{-x^r - \frac{r}{b} + r} \rightarrow -x^r - \frac{r}{b} + r = 0$$

$$x = \left(\frac{r}{b} \pm \sqrt{\frac{r^2}{b^2} - \frac{r}{b}}\right)^{\frac{1}{r-1}}$$

$$L_n = \frac{r}{b} \rightarrow b \cdot \frac{r}{b}$$

$$f(x) = \sqrt{r + ax - x^r} \quad x \geq 1 \quad x < 1$$

$$f(x) - x \geq 0 \quad \sqrt{r + ax - x^r} \geq x \quad x \in [-1, 1]$$

$$f(x) \geq x \quad [1, +\infty) \cup [-1, 1] = [-1, +\infty)$$

$$r + x \geq x \rightarrow x \geq -r \rightarrow -r \leq x < 1$$

$$f(x) = \sqrt{r + ax - x^r} \quad -\infty$$

$$f\left(\sin \frac{\pi}{n}\right) = \sqrt{r + a \sin \frac{\pi}{n} - \left(\sin \frac{\pi}{n}\right)^r}$$

$$\sqrt{\frac{r}{n} + 1 + \sqrt{\frac{r}{n}}} = \frac{r}{n} + r + \sqrt{r} - \sqrt{r} - \frac{r}{n} = \frac{r}{n}$$

مسألة

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

$$f(f(a)) = a$$

1

$$\frac{a+1}{(a+1)(-a+1)} = \frac{a+1}{a^2-1} = \frac{a+1}{(a-1)(a+1)} = \frac{1}{a-1}$$

$$\frac{1}{a-1} = a \rightarrow a(a-1) = 1 \rightarrow a^2 - a - 1 = 0$$

$$(a-1)(-a+1) = 1 \rightarrow a^2 - 1 = 1 \rightarrow a^2 = 2 \rightarrow a = \pm \sqrt{2}$$

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

$$g(x) = \sqrt{x^2-1} \rightarrow x^2 - 1 = 0 \rightarrow x = \pm 1$$

$$f(g(a)) = \frac{a+1}{a-1} = \frac{a+1}{a-1} \rightarrow a = \pm 1$$

$$f(x+y) = x^2 - 2xy + y^2 \rightarrow x^2 + y^2 - 2xy = (x-y)^2$$

$$f(x) = f(-x) \rightarrow x^2 - 2x(-x) + (-x)^2 = x^2 + 2x^2 + x^2 = 4x^2$$

$$f(x) = \cos x + a \sin x \rightarrow \tan x = \frac{\sin x}{\cos x}$$

$$f(x) = \cos x + a \sin x \rightarrow \cos x = \frac{1}{\sqrt{1+a^2}}$$

$$(1-الف) \quad \frac{x-1}{x} - \frac{x}{x-1} \geq 0 \rightarrow \frac{(x-1)^2 - x^2}{x(x-1)} \geq 0 \rightarrow \frac{-x+1}{x(x-1)} \geq 0$$

$$\frac{+}{-} \frac{-}{+} \frac{+}{-} \rightarrow D_f = (-\infty, 0) \cup \left[\frac{1}{x}, 1\right)$$

$$(2-ب) \quad \sqrt{x-1} + \sqrt{y+1} = 3 \quad , \quad \sqrt{y+1} = 3 - \sqrt{x-1} \rightarrow \sqrt{x-1} \geq 0 \rightarrow \sqrt{x-1} \leq 3 \rightarrow x \leq 10$$

$\downarrow$
 $x-1 \geq 0 \rightarrow x \geq 1 \quad I$

$$I, II \rightarrow 1 \leq x \leq 10 \rightarrow D_f = [1, 10]$$

$$3- \log_{\epsilon} x^2 - x - 2 \rightarrow x^2 - x - 2 > 0 \rightarrow (x-2)(x+1) > 0 \quad \frac{-1}{+} \frac{2}{-} \rightarrow x > 2 \leq x < -1 \quad I$$

$$\sqrt{x^2-1} + 1 \rightarrow \sqrt{x^2-1} \geq 0 \rightarrow x^2-1 \geq 0 \rightarrow x \geq 1 \leq x \leq -1 \quad II$$

$$I, II \rightarrow x < -1, x > 2 \rightarrow D_f = (-\infty, -1) \cup (2, +\infty)$$

$$4- \quad -2a - 1 = 0 \rightarrow a = -\frac{1}{2}$$

$$3- \quad f(a) - (-2)^2 = 0 \rightarrow a = -\frac{1}{2}$$

$$f(x) = \sqrt{3 - \frac{x}{2} - x^2} \rightarrow -x^2 - \frac{x}{2} + \frac{3}{2} = 0 \rightarrow x = \left(\frac{1}{2} \pm \sqrt{\frac{1}{4} + 12}\right) \times -\frac{1}{2}$$

$\rightarrow x = -2$
 $\rightarrow x = \frac{5}{2} \rightarrow b = \frac{5}{2}$

$$a+b = -\frac{1}{2} + \frac{5}{2} = 1$$

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

-V

$x \in D_f \rightarrow x \in \mathbb{R} - \{1\}$

پس به ازای تمامی نقاط در دامنه f بهتر است ✓