

19, 175 ازین

بنا حد

مهری موشی

Date: / /

Sat. Sun. Mon. Tue. Thu. Wed. Fri.

Subject: -----

(الف) $\frac{x-1}{x} - \frac{x}{x-1} \gg 0 \rightsquigarrow \frac{(x-1-x)(x-1+x)}{(x)(x-1)} \gg 0$

$\frac{0}{+} \frac{1}{+} \frac{1}{+}$

$D_f = (-\infty, 0) \cup [\frac{1}{2}, 1)$

(ب) $\left. \begin{array}{l} x+1 \neq 0 \\ x \neq 0 \\ x-1 \neq 0 \\ x+2 \neq 0 \end{array} \right\} \rightsquigarrow x \neq \{-1, 0, 1, -2, -\frac{5}{2}\}$

$D_f = R - \{-1, 0, 1, -2, -\frac{5}{2}\}$

(الف) $((\frac{1}{x})^x - 9)(3x^2 - 4^x) \gg 0$

$(-2) = \frac{1}{-1/2}$ $(+2.5)$

$D_f = (-\infty, -2] \cup [2.5, +\infty)$

(د) $x-1 \gg 0 \rightsquigarrow x \gg 1$ $\sqrt[3]{x+1} = 3 - \sqrt[3]{x-1}$

$\sqrt[3]{x-1} \leq 3 \rightsquigarrow x \leq 27$ $D_f = [1, 27]$

$x^2 - x - 2 \geq 0 \rightsquigarrow (x-2)(x+1) \geq 0$

$\sqrt{x^2-1} \neq -1$ $x^2 - 1 \gg 0 \rightsquigarrow$

$D_f = (-\infty, -1) \cup (2, +\infty)$

$$3 - 2a - \varepsilon = 0 \leadsto a = -\frac{1}{2} \quad \text{نقطه } b = -\frac{1}{2} \quad (4)$$

$$-2b = \frac{c}{A} \leadsto -2b = \frac{3}{-1} = -3 \quad \text{نقطه } b = \frac{3}{2}$$

$$a+b = -\frac{1}{2} + \frac{3}{2} = 1 \quad (5)$$

$$f(x) - a \geq 0 \leadsto \begin{cases} x \geq 1 \rightarrow 3x - 2 - a = 2x - 2 \rightarrow 2x - 2 \geq 0 \rightarrow x \geq 1 \\ x < 1 \rightarrow 2x + 3 - a = x + 3 \rightarrow x + 3 \geq 0 \rightarrow x \geq -3 \end{cases} \quad (6)$$

$$Df = [-3, +\infty) \quad (7)$$

$$x = \frac{\sqrt{x}}{2} + 1 = \frac{\sqrt{x} + 2}{2} \rightarrow f\left(\frac{\sqrt{x} + 2}{2}\right) = \frac{1}{2} \left(\frac{(\sqrt{x} + 2)^2}{4} \right) - \frac{1}{2} \left(\frac{\sqrt{x} + 2}{2} \right) \quad (8)$$

$$\frac{3 + 2 + \frac{1}{2}\sqrt{x}}{2} - \frac{1}{2}\sqrt{x} - \frac{1}{2} = \frac{3 + \frac{1}{2}\sqrt{x} - \frac{1}{2}\sqrt{x} - 1}{2} = \frac{1}{2} \quad (9)$$

$$f(f(a)) = \frac{\frac{a+1}{a-1} + 1}{\frac{a+1}{a-1} - 1} = \frac{\frac{2a}{a-1}}{\frac{2}{a-1}} = a \leadsto f(f(a)) = a \quad (10)$$

س: برای هر چند به جز این خروج

$$\{a \in \mathbb{Z}, a \neq 1\} \quad \{a \in \mathbb{R}, a \neq 1\}$$

$$f(\sqrt{a^2 - 1}) = -\varepsilon \leadsto x^2 - \varepsilon x = -\varepsilon \leadsto (x - 2)^2 = 0 \leadsto x = 2 \quad (11)$$

$$\sqrt{a^2 - 1} = 2 \rightarrow a^2 - 1 = 4 \leadsto a = \pm \sqrt{5} \quad (12)$$

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$$f(r) \times f(-r) = (1-d+r)(r_0+r) = (r)(vr) = 1 \quad (9)$$

$$r \cos \theta + d \cos \theta = r_0 d \leadsto r \cos \theta + d \cos \theta - \frac{V}{r} = 0 \quad (10)$$

$$\wedge \cos \theta + 1 \cos \theta - V = 0 \leadsto (r \cos \theta - r)(r \cos \theta + r) = 0 \leadsto \cos \theta = \frac{1}{r} \quad \checkmark$$

$$\cos \theta = -\frac{V}{r} \quad \times$$

$$\tan \theta = \frac{1}{\cos \theta} - 1 \leadsto \tan \theta = \frac{1}{\frac{1}{r}} - 1 = r - 1 \quad (11)$$

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

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

پس به ازای تمامی نقاط در دامنه f برقرار است $\checkmark$