

۱۹۱۷۵ آفین

سیا تراخان

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

$$\frac{-2x+1}{x(x-1)} \geq 0$$

نقطه معلوم نبود : با روش

ب) $x+1 \neq 0$ $x \neq -1$ $x+2 \neq 0$ $x \neq -2$

$$\frac{x}{x-1} + \frac{1}{x+2} \neq 0$$

$$\frac{x(x+2) + (x-1)}{(x-1)(x+2)} \neq 0$$

$$\frac{x^2 + 3x - 1}{(x-1)(x+2)} \neq 0$$

$x \neq \frac{-3 \pm \sqrt{17}}{2}$

$D_f = \mathbb{R} - \{-1, -2, \frac{-3 \pm \sqrt{17}}{2}\}$

الف) $(\frac{1}{x})^x - 9(32 - x^x) \geq 0$

$x^x = 32 - \frac{1}{x^x}$
 $x = -2$

$\frac{1}{x^x} - 9$	+	-	-
$32 - x^x$	+	+	-
$f(x)$	+	-	+

$D_f = (-\infty, -2) \cup (\frac{5}{2}, +\infty)$

ب) $(\sqrt{y-1})^2 = 3 - \sqrt{x-1}$

$x-1 \geq 0 \rightarrow x \geq 1$

$3 - \sqrt{x-1} \geq 0 \rightarrow \sqrt{x-1} \leq 3 \rightarrow x-1 \leq 9 \rightarrow x \leq 10$

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

$x^2 - 1 \geq 0 \rightarrow x \geq 1 \text{ یا } x \leq -1$



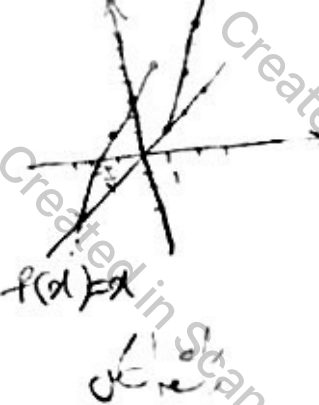
$x < -1$ یا $x > 2$

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



$a+b = \frac{1}{x} + \frac{x}{x} = 1$

$(\frac{b}{a})_0 = 0 \rightarrow a = \frac{1}{x} + (-x) = -\frac{1}{x}$



x	1	2	3	4
$f(x)$	1	2	3	4

$f(x) = x$
 $f(x) > x$
 $D_f = [-2, +\infty)$

$f(x) = 2\left(\frac{\sqrt{x+2}}{2}\right)^2 - 4\left(\frac{\sqrt{x+2}}{2}\right) = \frac{2(\sqrt{x+2})^2}{4} - 2(\sqrt{x+2})$
 $\sin\left(\frac{x}{2} + \cos\right)x = \frac{\sqrt{x+2}}{2}$
 $(x) \text{ غ. د. م. م.}$

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

متغیرمیں تو دو سوال از صمیم باشند سنیے برقرار باشد ت
 $D_f = \{a \mid a \in \mathbb{Z}, a \neq 1\}$
 $D_f: \mathbb{R} - \{1\}$

$g(a) = \sqrt{a^2-1}$
 $f(\sqrt{a^2-1}) = \frac{(\sqrt{a^2-1})^2}{a^2-1} = \frac{a^2-1}{a^2-1} = 1$

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

$f(-3) = (a-3)(a-2) = (-4-3)(-4-2) = -7(-6) = 42$
 $a+3=-3$
 $a=-6$

$f(4) = (a-4)(a-2) = (1-4)(1-2) = -3(-1) = 3$
 $a+4=4$
 $a=0$

$\cos x + \sin x = 0 \rightarrow \cos x = -\sin x$
 $\cos x + \sin x - \cos x = 0$
 $(\cos x + 1)(\cos x - 1) \rightarrow \cos x = -1$
 $\cos x = -1 \rightarrow x = 2k\pi + \pi$

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

$$x \in \text{Dom } f \rightarrow x \in \mathbb{R} - \{1\}$$

پس برای تمامی نقاط در دامنه f برقرار است ✓

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