

لایزال ابراهیمی باز هم

۱- $f(x) = \sqrt{\frac{x-1}{x} - \frac{x}{x-1}}$ (الف)

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

$$\Rightarrow \frac{-2x + 1}{x(x-1)} \geq 0 \quad \begin{array}{c} 0 \quad \frac{1}{2} \quad 1 \\ + \quad - \quad + \quad - \end{array} \quad D_f = (-\infty, 0) \cup \left[\frac{1}{2}, 1\right)$$

ب) $f(x) = \frac{\frac{1}{x+1} - \frac{1}{x}}{\frac{1}{x-1} + \frac{1}{x+2}}$ $\begin{array}{l} x \neq -1 \\ x \neq 0 \end{array}$

$$\frac{1(x+2) + x-1}{(x-1)(x+2)} \Rightarrow \frac{2x+1}{(x-1)(x+2)} \quad D_f = \mathbb{R} - \left\{-2, -\frac{3}{2}, -1, 0\right\}$$

۲- $f(x) = \sqrt{\left(\left(\frac{1}{x}\right)^x - 9\right)(22 - 4^x)}$ (الف)

$$\left(\frac{1}{x}\right)^x - 9 = 0 \Rightarrow \left(\frac{1}{x}\right)^x = 9 \Rightarrow x = -2 \quad \begin{array}{c} -2 \quad \frac{d}{2} \\ + \quad - \quad + \end{array}$$

$$22 - 4^x = 0 \Rightarrow 4^x = 22 \Rightarrow x = \frac{d}{2}$$

$$D_f = (-\infty, -2] \cup \left[\frac{d}{2}, +\infty\right)$$

$$ب) \sqrt[3]{x-1} + \sqrt{y+1} = 3$$

$$\sqrt{y+1} = 3 - \sqrt[3]{x-1} \Rightarrow 3 - \sqrt[3]{x-1} \geq 0 \Rightarrow \sqrt[3]{x-1} \leq 3 \quad \text{①}$$

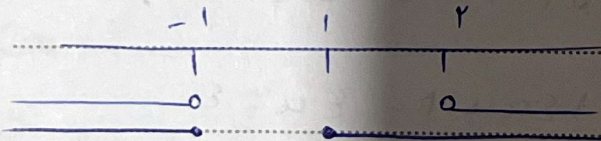
$$x-1 \leq 27 \Rightarrow x \leq 28, \quad x-1 \geq 0 \Rightarrow x \geq 1 \quad D_f = [1, 28]$$

$$f(x) = \frac{\log_2(x^2 - x - 2)}{\sqrt{x^2 - 1} + 1} \quad x^2 - x - 2 > 0 \Rightarrow (x-2)(x+1) > 0$$

$$\begin{matrix} x=2 \\ x=-1 \end{matrix}$$

$$\begin{matrix} -1 & 2 \\ + & - & + \end{matrix}$$

$$x^2 - 1 > 0 \Rightarrow x^2 > 1 \Rightarrow x > 1 \text{ or } x < -1$$



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

$$f(x) = \sqrt{r + ax - x^2} \quad -x^2 + ax + r \geq 0 \quad \begin{matrix} -r & b \\ + & - & + \end{matrix}$$

$$D_f = [-r, b]$$

$$x^2 - ax - r \leq 0$$

$$(x+r)(x-b) \Rightarrow (x+r)(x-\frac{r}{r}) \Rightarrow x^2 + \frac{1}{r} - r \leq 0$$

$$-r \times b = -r$$

$$b = \frac{-r}{-r} = \frac{r}{r}$$

$$a = -\frac{1}{r}$$

$$a+b = \frac{r}{r} + (-\frac{1}{r}) = \frac{r}{r} = 1$$

۱۳ صفر

SAT 10 SEP

$$f(x) = \begin{cases} 2x-1, & x \geq 1 \\ 2x+1, & x < 1 \end{cases} \rightarrow \begin{cases} 2x-1 \geq x \\ 2x \geq 1 \\ x \geq 1 \end{cases} \quad -\delta$$

$$g(x) = \sqrt{f(x)-x} \quad \begin{cases} 2x+1 \geq x \\ x+1 \geq 0 \\ x \geq -1 \end{cases}$$

$$f(x)-x \geq 0 \rightarrow f(x) \geq x \quad Dg = [-1, +\infty)$$

$$f(x) = \begin{cases} (a+1)(x-1), & x \geq 1 \\ 2a+1x, & x < 1 \end{cases} \quad -\gamma$$

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

$$2(\delta a + 1a + \delta + 1) = \varepsilon a - \varepsilon \quad 1\varepsilon a + 1\varepsilon = \varepsilon a - \varepsilon$$

$$10a = -11$$

$$a = \frac{-11}{10} = -\frac{11}{10}$$

$$f(x) = \sqrt{x} + \frac{1}{\sqrt{x}} + 1 \quad -\nu$$

$$\frac{1}{1+\sqrt{1}} = 1-\sqrt{1} \quad \frac{f(1+\sqrt{1}) + f(1-\sqrt{1})}{\frac{1}{\varepsilon}}$$

$$f(t) + f\left(\frac{1}{t}\right) = \sqrt{t} + \frac{1}{\sqrt{t}} + 1 + \sqrt{\frac{1}{t}} + \frac{1}{\sqrt{\frac{1}{t}}} + 1 = 2\left(\sqrt{t} + \frac{1}{\sqrt{t}}\right) + 2$$

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

$$A' = (1-\sqrt{1}) + (1+\sqrt{1}) + 2\sqrt{(1+\sqrt{1})(1-\sqrt{1})} = 2\sqrt{1-1} + 2 = 2$$

$$f(1+\sqrt{1}) + f(1-\sqrt{1}) = 2A + 2 = 2\sqrt{1} + 2$$

$$2f(x) - 3f(-x) = \varepsilon x^2 - x \quad -1$$

$$(2f(x) - 3f(-x) = \varepsilon x^2 - x) \times x$$

$$(2f(-x) - 3f(x) = \varepsilon x^2 + x) \times x$$

$$4f(x) - 9f(-x) = 8x^2 - 2x$$

$$4f(-x) - 9f(x) = 12x^2 + 2x$$

$$-8f(x) = 20x^2 + 2x \quad f(x) = \frac{20x^2 + 2x}{-8} =$$

$$-\varepsilon x^2 - \frac{x}{4}$$

$$(x+2)f(x) - 3xf(x+2) = \varepsilon x^2 - mx + m-1 \quad -4$$

$$x=0 \rightarrow 2f(0) = 3m-1$$

$$f(0) = \frac{3m-1}{2}$$

$$\frac{3m-1}{2} = \frac{8m+12}{4}$$

$$18m-4 = 12m+12$$

$$6m = 16 \rightarrow m = \frac{8}{3} = \frac{4}{1.5}$$

$$x=-2 \rightarrow 4f(0) = 14 + 2m + 3m-1$$

$$4f(0) = 12 + 5m \rightarrow f(0) = \frac{3m+12}{4}$$

$$f(0) = \frac{3 \times \frac{4}{1.5} + 12}{4} = \frac{20}{4}$$

شہر یور

۱۵ صفر

MON 12 SEP

۲۱

دوشنبہ

f تابع خطی، $ax + b$ ۲۰

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

$$2f(-1) = -14$$

$$f(-1) = -7$$

$$\frac{3 + 12 + 3}{-1}$$