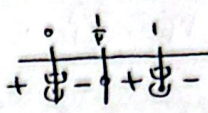
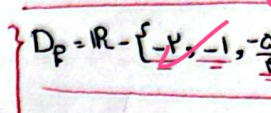
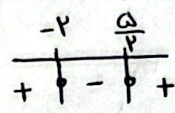


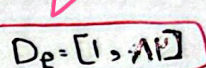
الف) $\frac{x-1}{x} - \frac{x}{x-1} \geq 0 \leadsto \frac{(x-1)^2 - x^2}{x(x-1)} \geq 0 \rightarrow \frac{1-2x}{x(x-1)} \geq 0$  $D_f = (-\infty, 0) \cup [\frac{1}{2}, 1)$

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

ب) $\frac{1}{x+1} - \frac{2}{x} \leadsto x \neq 0, -1$
 $\frac{3}{x-1} + \frac{1}{x+2} \leadsto x \neq 1, -2$ $\hookrightarrow 3x+4+x-1 = 4x+3 \neq 0 \rightarrow x \neq -\frac{3}{4}$  $D_f = \mathbb{R} - \{-2, -\frac{3}{4}, -1, 1\}$

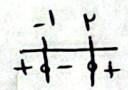
الف) $(\frac{1}{x})^2 - 9 \geq 0 \rightarrow x = \frac{1}{3}$  $D_f = (-\infty, -2] \cup [\frac{1}{3}, +\infty)$

$x = -2$

ب) $\sqrt[4]{x-1} + \sqrt{y+1} = 3 \leadsto \sqrt{y+1} = 3 - \sqrt[4]{x-1}$
 $x-1 \geq 0 \hookrightarrow x \geq 1$
 $\hookrightarrow \sqrt{y+1} = 3 - \sqrt[4]{x-1} \geq 0 \hookrightarrow x-1 \leq 1 \rightarrow x \leq 2$  $D_f = [1, 2]$

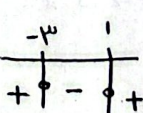
1 $x^2 - x - 2 > 0 \rightarrow (x+1)(x-2) > 0$ (I)
 $x < -1$ $x > 2$

2 $x^2 - 1 > 0 \rightarrow x < -1$ و $x > 1$ (II)

$(I) \wedge (II) \Rightarrow D_f = (-\infty, -1) \cup (2, +\infty)$ 

$\star x = -2 \rightarrow 3 - 2a - f = 0 \rightarrow a = \frac{1}{p}$ $-x^2 - \frac{1}{p}x + 3 \geq 0$ $\Delta = \frac{1}{p^2} + 12 = \frac{f9}{f}$

$\hookrightarrow \bar{w}: x = \frac{\frac{1}{p} \pm \frac{\sqrt{f9}}{p}}{-\frac{1}{p}} = \frac{-1 \pm \sqrt{f9}}{f}$ $b = \frac{3}{p} \leadsto a+b \leq 1$ $\frac{1}{p} + \frac{3}{p} = \frac{4}{p}$

الف) $\begin{cases} 3x-2 \geq x \leadsto x \geq 1 \checkmark \\ 2x+3 = x \leadsto x = -3 \checkmark \\ f(x) - x \geq 0 \leadsto (x < 1) \end{cases}$  $D_f = [-3, +\infty)$

جوابه برقرار $3x-2 \geq x$

$D_f = [-3, +\infty)$

$$\bullet f\left(\sin\frac{\sqrt{p}}{p} + \cos\sqrt{p}\right) = f\left(1 + \sqrt{\frac{p}{p}}\right)$$

$$\rightarrow f\left(1 + \sqrt{\frac{p}{p}}\right)^p - f - \sqrt{p} = \frac{1}{p}$$

6

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

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

$$\frac{\frac{a+1}{a-1} + 1}{\frac{a+1}{a-1} - 1} = a \rightarrow \frac{\frac{2a}{a-1}}{\frac{2}{a-1}} = a \rightarrow a = \mathbb{R} - \{1\}$$

7

$$\star f(\sqrt{a^2-1}) = -f \rightarrow a^2-1 - f\sqrt{a^2-1} = -f$$

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

$$f(g(a))$$

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

8

$$f_f = 1 - \omega + f = f$$

$$f_{f-f} = f_f + f_0 + f = f$$

$$f_f \times f_{f-f} = f \times f = 1ff$$

$$x \begin{cases} x+f=f \rightarrow x=1 \\ x+f=-f \rightarrow x=-f \end{cases}$$

9

$$\bullet f \cos^2 x + \omega \cos x - f \omega = 0 \rightarrow \Delta = 11 \rightarrow \cos x = \frac{-\omega \pm 4}{1} = \frac{1}{p} \sqrt{55}$$

و در بازه $[-1, 1]$ است

$$\star \cos^2 x = \frac{1}{p} \rightarrow \tan^2 x = f \Rightarrow f_{f, \omega} = f$$

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