

سارا صافى

①

الف- $x \neq 1 \quad x \neq 0 \quad \frac{x-1}{x} - \frac{x}{x-1} > 0$

$$\frac{\cancel{x^2} + 1 - \cancel{x^2}}{x(x-1)} \geq 0 \quad \frac{1-x}{x(x-1)} \geq 0 \quad \frac{x}{1} \mid \begin{array}{c} 0 \\ + \end{array} \quad \frac{1}{x} \mid \begin{array}{c} 0 \\ - \end{array} \quad \frac{1}{x-1} \mid \begin{array}{c} 0 \\ + \end{array}$$

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

ب- $x \neq 0 \quad x \neq -1 \quad x \neq 1 \quad x \neq -2 \quad x \neq -\frac{3}{2}$

$$\frac{x}{x-1} + \frac{1}{x+2} \neq 0 \quad \frac{x^2 + 4 + x - 1}{(x-1)(x+2)} = 0 \quad x + 3 = 0$$

$$D = \mathbb{R} - \left\{-2, -\frac{3}{2}, -1, 0, 1\right\}$$

②

$$(x^2 - x^x) \left(\left(\frac{1}{x}\right)^x - 4 \right) > 0 \quad \frac{x}{1} \mid \begin{array}{c} -2 \\ + \end{array} \quad \frac{0}{x} \mid \begin{array}{c} 0 \\ + \end{array}$$

$$x^2 = x^x \rightarrow x^x = x^\infty$$

$$\left\{ \begin{array}{l} x^2 = 0 \quad x = \frac{0}{x} \\ \left(\frac{1}{x}\right)^x = 4 \quad x^x = x^{-x} \end{array} \right.$$

$$D = (-\infty, -2] \cup \left[\frac{0}{x}, +\infty\right)$$

$$\left(\frac{1}{x}\right)^x = 4 \quad x^x = x^{-x} \quad \boxed{x = -2}$$

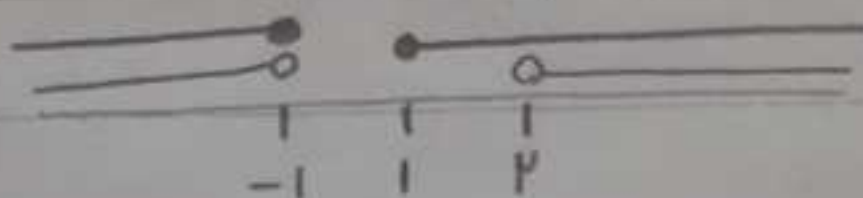
ب - $x-1 \geq 0 \Rightarrow x \geq 1 \cap x \leq 12 \leadsto \boxed{1 \leq x \leq 12}$ (۴)

$\sqrt{y+1} = 3 - \sqrt{x-1} \quad \sqrt{x-1} \geq 0 \quad x-1 \leq 1$
 $\sqrt{x-1} \leq 3 \quad x \leq 12$

$x^2 - x - 2 \geq 0 \Rightarrow (x-2)(x+1) \geq 0$ (۵)

$x^2 - 1 \geq 0 \Rightarrow x^2 \geq 1$

$x \geq 1 \quad x \leq -1$



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

$x^2 + ax - x^2 \geq 0 \quad x^2 - ax - 3 \leq 0$ (۶)

$x \mid -2 \quad b$
 $p \mid + \quad - \quad +$

$-3 + 7 + 2a = 0 \quad 2a = -1 \quad a = -\frac{1}{2}$

$x^2 + \frac{1}{2}x - 3 \leq 0$

$b = \frac{3}{2} \quad a = -\frac{1}{2}$

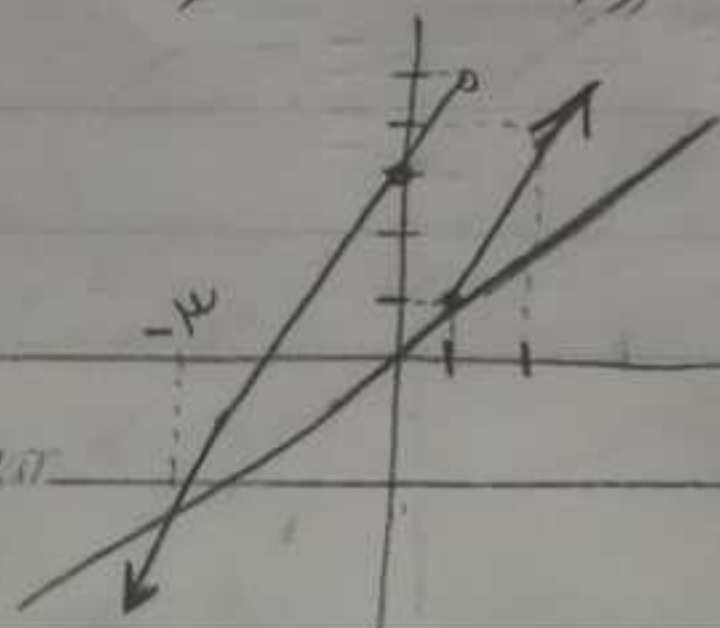
$a+b = \frac{3}{2} - \frac{1}{2} = \frac{2}{2} = 1$

$2x^2 + x - 6 \leq 0 \quad x \mid -2 \quad \frac{3}{2}$
 $p \mid + \quad - \quad +$

$(x+3)(x-2) \leq 0$

$(-2) = -\frac{1}{2} \quad (\frac{3}{2})$

$f(x) - x \geq 0 \quad f(x) \geq x$ (۷)



$x^2 + 3 = x$

$x = -3$

$D = (-3, +\infty)$



Senobar

$$\sin \frac{\pi}{\mu} = \frac{\sqrt{\mu}}{\mu} \quad \cos 2\pi = 1$$

(6)

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

$$\frac{\mu + \sqrt{\mu} - 1 - \sqrt{\mu}}{\mu} = \frac{-1}{\mu}$$

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

(7)

برای a مقادیر دلخواه $a \neq 1$ خواهیم داشت جوابی صحیح

است. $a \neq 1$ نیز صحیح است.

$$D = \mathbb{Z} - \{1\} \leftarrow a \in \mathbb{Z} \text{ و } a \neq 1$$

$$g(a) = b \quad f(b) = -f \quad x^2 - \varepsilon x = -\varepsilon$$

(8)

$$x^2 - \varepsilon x + \varepsilon = 0 \quad (x-2)^2 = 0 \quad x = 2 \quad b = 2$$

$$g(a) = 2 \quad \sqrt{a^2 - 1} = 2 \quad a^2 - 1 = 5 \quad a = \pm \sqrt{5}$$

$$f(\varepsilon) \leadsto x + \mu = \varepsilon \quad x = 1 \leadsto 1 - \omega + \mu \leadsto f(\varepsilon) = 2 \quad (9)$$

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

$$\mu^2 \times \mu = \boxed{144}$$

$$\mu \cos x^2 + \omega \cos x = \mu/\omega$$

(10)

$$\mu \cos x^2 + \omega \cos x = \mu \quad \mu \cos x^2 + \omega \cos x - \mu = 0$$

$$\text{Benobar} \quad \cos x^2 + \omega \cos x - \omega^2 = 0 \quad (\cos x + 1)(\cos x - \mu) = 0$$

$$\cos x = -\frac{1}{\mu} \leadsto \frac{\mu}{\mu} x \quad f(\mu, \omega) = \tan \varphi_0 \rightarrow \boxed{\sqrt{\mu}}$$

$$\cos x = \frac{1}{\mu} \leadsto \frac{1}{\mu} \mu \quad \mu x = 90^\circ$$