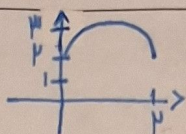
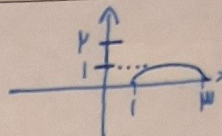


آزمین ۲

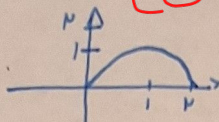
الف)  $f(x) + 1$



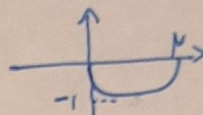
ب)  $f(x-1)$



ج)  $1/f(x)$



د)  $-f(x)$



الف)  $x^2 - 5x + 4 > 0 \rightarrow (x-1)(x-4) > 0 \rightarrow \frac{1}{+} \frac{-}{-} \frac{+}{+} \rightarrow Df = (-\infty, 1) \cup (4, +\infty)$

ب)  $x^2 - 4x + 4 < 0 \rightarrow (x-1)(x-4) < 0 \rightarrow \frac{1}{+} \frac{-}{-} \frac{+}{+} \rightarrow Df = (1, 4)$

ج)  $x^2 + 4x + 4 > 0 \rightarrow (x+1)(x+4) > 0 \rightarrow \frac{-}{+} \frac{-}{-} \frac{+}{+} \rightarrow Df = (-\infty, -1) \cup [-4, +\infty)$

د)  $x^2 - 1x + 4 < 0 \rightarrow (x-1)(x-4) < 0 \rightarrow \frac{1}{+} \frac{-}{-} \frac{+}{+} \rightarrow Df = [1, 4]$

الف)  $\frac{x^2 - 13x + 12}{x-4} < 0 \rightarrow \frac{(x-1)(x-12)}{x-4} < 0 \rightarrow \frac{1}{-} \frac{+}{+} \frac{-}{+} \rightarrow Df = (-\infty, 1) \cup (12, 4)$

ب)  $\frac{x^2 - 1}{x^2 - 4x + 4} > 0 \rightarrow \frac{(x+1)(x-1)}{(x-1)(x-4)} > 0 \rightarrow \frac{-}{+} \frac{+}{-} \frac{-}{+} \rightarrow$

$Df = (-\infty, -1] \cup (4, +\infty)$

الف)  $y = \sqrt{\frac{x^2 - 1}{x^2 - 2x}} \rightarrow \sqrt{\frac{(x-1)(x+1+x)}{x(x^2-1)}} \rightarrow \sqrt{\frac{(x-1)(x^2+1+x)}{x(x+1)(x-1)}}$

$\frac{-}{+} \frac{+}{-} \frac{+}{+} \rightarrow Df = (-\infty, -1) \cup (0, 1) \cup (1, +\infty)$

ب)  $y = \sqrt{\frac{x^2 - 14}{x^2 - 5x + 4}} \rightarrow \sqrt{\frac{(x^2 - 4)(x+4)}{(x-1)(x-4)}} \rightarrow \frac{-}{+} \frac{+}{-} \frac{+}{+} \rightarrow Df = (-\infty, -4] \cup (1, 4) \cup (4, +\infty)$

الف)  $y = \sqrt{4 - \sqrt{1-x}} \rightarrow 1-x > 0 \rightarrow x \leq 1$

$4 - \sqrt{1-x} > 0 \rightarrow \sqrt{1-x} \leq 4 \rightarrow 1-x \leq 16 \rightarrow -14 \leq x \rightarrow Df = [-14, 1]$

ب)  $y = \sqrt{13 - \sqrt{x-1}} \rightarrow x-1 > 0 \rightarrow x > 1$

$13 - \sqrt{x-1} > 0 \rightarrow \sqrt{x-1} \leq 13 \rightarrow x-1 \leq 169 \rightarrow x \leq 170 \rightarrow Df = [1, 170]$

$$y = \sqrt{k - px^p} \rightarrow k - px^p \geq 0 \rightarrow px^p \leq k \rightarrow x^p \leq \frac{k}{p} \rightarrow -\sqrt[p]{\frac{k}{p}} \leq x \leq \sqrt[p]{\frac{k}{p}} \\ \rightarrow D_f = [-\sqrt[p]{\frac{k}{p}}, \sqrt[p]{\frac{k}{p}}]$$

(L91)

$$y = \sqrt{p|x| - q} \rightarrow p|x| - q \geq 0 \rightarrow p|x| \geq q \rightarrow |x| \geq \frac{q}{p} \begin{cases} x \geq \frac{q}{p} \\ x \leq -\frac{q}{p} \end{cases} \\ \rightarrow D_f = (-\infty, -\frac{q}{p}] \cup [\frac{q}{p}, +\infty)$$

(L90)

$$L91) y = \sqrt{\frac{|x|+1}{|x|-p}} \rightarrow |x|-p \neq 0 \rightarrow |x| \neq p \rightarrow x \neq \pm p \rightarrow D_f = \mathbb{R} - \{\pm p\}$$

$$L90) y = \sqrt{\frac{\sqrt{x}+1}{\sqrt{x}-p}} \rightarrow \begin{matrix} x \geq 0 \\ \sqrt{x}-p \neq 0 \end{matrix} \rightarrow \sqrt{x} \neq p \rightarrow x \neq p^2 \rightarrow D_f = [0, +\infty) - \{p^2\}$$

$$L91) y = \frac{\sin x}{p \cos x - 1} \rightarrow p \cos x - 1 \neq 0 \rightarrow p \cos x \neq 1 \rightarrow \cos x \neq \frac{1}{p} \\ D_f = \mathbb{R} - \{k\pi \pm \frac{\pi}{p}\}$$

$$L90) y = \frac{\cos x + 1}{p \sin x + 1} \rightarrow p \sin x + 1 \neq 0 \rightarrow p \sin x \neq -1 \rightarrow \sin x \neq -\frac{1}{p} \\ D_f = \mathbb{R} - \{k\pi + \frac{\pi}{p}, k\pi - \frac{\pi}{p}\}$$

$$L92) y = \frac{\tan x + p}{\cot x - 1} \rightarrow \begin{matrix} \cos x \neq 0 \\ \sin x \neq 0 \end{matrix} \quad \cot x - 1 \neq 0 \rightarrow \cot x \neq 1 \\ D_f = \mathbb{R} - \{k\pi, k\pi + \frac{\pi}{p}\}$$

$$L93) y = \frac{\sin^p x + 1}{p \sin^p x - p} \rightarrow \begin{matrix} p \sin^p x - p \neq 0 \\ p \sin^p x \neq p \end{matrix} \rightarrow \sin^p x \neq 1 \rightarrow \sin x \neq \pm \sqrt[p]{p} \\ \rightarrow D_f = \mathbb{R} - \{k\pi + \frac{\pi}{p}, k\pi + \frac{p\pi}{p}\}$$

$$y = \frac{1}{\sqrt{p|x-p| - \frac{1}{p}}} \rightarrow p|x-p| - \frac{1}{p} > 0 \rightarrow p|x-p| > \frac{1}{p} \rightarrow |x-p| > \frac{1}{p^2} \xrightarrow{①} |x| > \frac{q}{p} \\ \xrightarrow{②} x - p < -\frac{1}{p^2} \rightarrow x < \frac{p}{p^2}$$

$$D_f = (-\infty, \frac{p}{p^2}) \cup (\frac{q}{p}, +\infty)$$

$$L91) y = \sqrt{k - p|x|} \rightarrow k - p|x| \geq 0 \rightarrow p|x| \leq k \rightarrow |x| \leq \frac{k}{p} \rightarrow x \leq \frac{k}{p} \\ -\frac{k}{p} \leq x \\ D_f \rightarrow [-\frac{k}{p}, \frac{k}{p}]$$

$$L90) y = \sqrt{\frac{|x|}{|x|+1}} \rightarrow \frac{0}{+ \infty +} \rightarrow D_f = \mathbb{R} - \{0\}$$