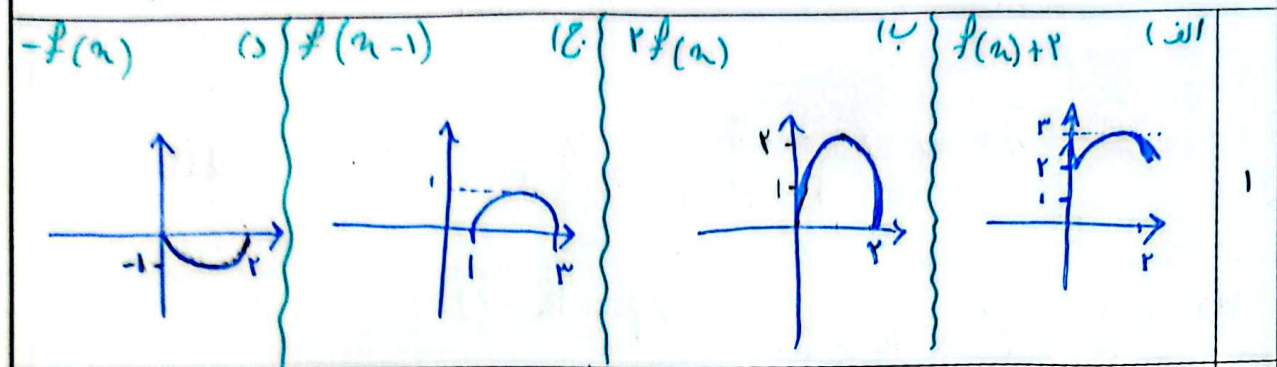




الف) $x^2 - 5x + 4 > 0 \rightarrow (x-1)(x-4) > 0 \rightarrow \frac{1}{+} \frac{4}{-} \rightarrow (-\infty, 1) \cup (4, +\infty)$

ب) $x^2 - 4x + 5 < 0 \rightarrow (x-1)(x-5) < 0 \rightarrow \frac{1}{+} \frac{5}{-} \rightarrow (1, 5)$

ج) $x^2 + 4x + 5 \geq 0 \rightarrow (x+1)(x+5) \rightarrow \frac{-5}{+} \frac{-1}{-} \rightarrow (-\infty, -5] \cup [-1, +\infty)$

د) $x^2 - 5x + 4 \leq 0 \rightarrow (x-1)(x-4) \rightarrow \frac{1}{+} \frac{4}{-} \rightarrow [1, 4]$

الف) $\frac{x^2 - 3x + 2}{x - 5} < 0 \rightarrow \frac{(x-1)(x-2)}{x-5} < 0 \rightarrow \frac{1}{-} \frac{2}{+} \frac{5}{-} \rightarrow (-\infty, 1) \cup (2, 5)$

ب) $\frac{x^2 - 1}{x^2 - 4x + 5} \geq 0 \rightarrow \frac{(x-1)(x+1)}{(x-1)(x-5)} \geq 0 \rightarrow \frac{-1}{+} \frac{1}{-} \frac{5}{-} \rightarrow (-\infty, -1] \cup (5, +\infty)$

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

ب) $\frac{x^2 - 14}{x^2 - 5x + 6} \geq 0 \rightarrow \frac{(x+4)(x-4)}{(x-1)(x-6)} \geq 0 \rightarrow \frac{-4}{+} \frac{1}{-} \frac{6}{+} \rightarrow D_f = (-\infty, -4) \cup (1, 6) \cup (6, +\infty)$

الف) $y = \sqrt{4-x} - \sqrt{2-x}$

$2-x \geq 0 \rightarrow x \leq 2$

$4-\sqrt{2-x} \geq 0 \rightarrow \sqrt{2-x} \leq 4 \rightarrow 2-x \leq 14 \rightarrow x \geq -12$

$D_f = -12 \leq x \leq 2$

ب) $3-\sqrt{x-2} \geq 0 \rightarrow \sqrt{x-2} \leq 3 \rightarrow x-2 \leq 9 \rightarrow x \leq 11$

$\sqrt{x-2} \geq 0 \rightarrow x-2 \geq 0 \rightarrow x \geq 2$

$D_f = 2 \leq x \leq 11$

$x \geq 2$

ا) $\varepsilon - r a^x \geq 0 \rightarrow r a^x \leq \varepsilon \rightarrow a^x \leq \frac{\varepsilon}{r}$ $a \leq \pm \sqrt[r]{\frac{\varepsilon}{r}}$ ب) $r a - 9 \geq 0 \rightarrow \begin{cases} a \geq \frac{9}{r} \\ a \geq r \end{cases} \rightarrow \begin{cases} a \geq \frac{9}{r} \\ a \leq -r \end{cases}$ $D_f = (-\infty, -r) \cup (\frac{9}{r}, +\infty)$	6
ا) $a - r \neq 0$ $a \neq r \rightarrow a \neq \pm r$ $D_f = \mathbb{R} - \{\pm r\}$ ب) $\sqrt{a} \rightarrow a \geq 0$ $\sqrt{a} - r \neq 0$ $\sqrt{a} \neq r \rightarrow a \neq r^2$ $D_f = [0, +\infty) - \{r^2\}$	7
ا) $r \cos a - 1 \neq 0$ $\cos a \neq \frac{1}{r} \xrightarrow{D_f} \mathbb{R} - \{rK\pi + \frac{\pi}{r}, rK\pi - \frac{\pi}{r}\}$ ب) $r \sin a + 1 \neq 0 \rightarrow \sin a \neq -\frac{1}{r} \rightarrow D_f = \mathbb{R} - \{rK\pi + \frac{\pi}{r}, rK\pi - \frac{\pi}{r}\}$ ج) $\cos a \neq 0 \rightarrow K\pi + \frac{\pi}{2}$ $\sin a \neq 0 \rightarrow K\pi$ $\cot a - 1 \neq 0 \rightarrow \cot a \neq 1 \rightarrow K\pi + \frac{\pi}{4}$ $D_f = \mathbb{R} - \{K\pi, K\pi + \frac{\pi}{r}, K\pi + \frac{\pi}{2}\}$ د) $r \sin^2 a - r \neq 0$ $\sin^2 a \neq \frac{1}{r} \Rightarrow \sin a \neq \pm \sqrt{\frac{1}{r}} \rightarrow D_f = \mathbb{R} - \{rK\pi + \frac{\pi}{r}, rK\pi + \frac{\pi}{r}\}$	8
$r a - \frac{1}{r} - \frac{1}{r} > 0$ $a - \frac{1}{r} > \frac{1}{r} \Rightarrow \begin{cases} a - \frac{1}{r} > \frac{1}{r} \rightarrow a > \frac{2}{r} \\ a - \frac{1}{r} < -\frac{1}{r} \rightarrow a < \frac{0}{r} \end{cases}$ $D_f = (-\infty, \frac{2}{r}) \cup (\frac{0}{r}, +\infty)$	9
ا) $\varepsilon - r a \geq 0 \rightarrow a \geq \frac{\varepsilon}{r} \rightarrow \begin{cases} a \geq \frac{\varepsilon}{r} \\ a \leq -\frac{\varepsilon}{r} \end{cases} \rightarrow D_f = -\frac{\varepsilon}{r} < a < \frac{\varepsilon}{r}$ ب) $\frac{ a }{ a } \geq 0 \rightarrow a \neq 0 \rightarrow a \neq 0$ $D_f = \mathbb{R} - \{0\}$	10