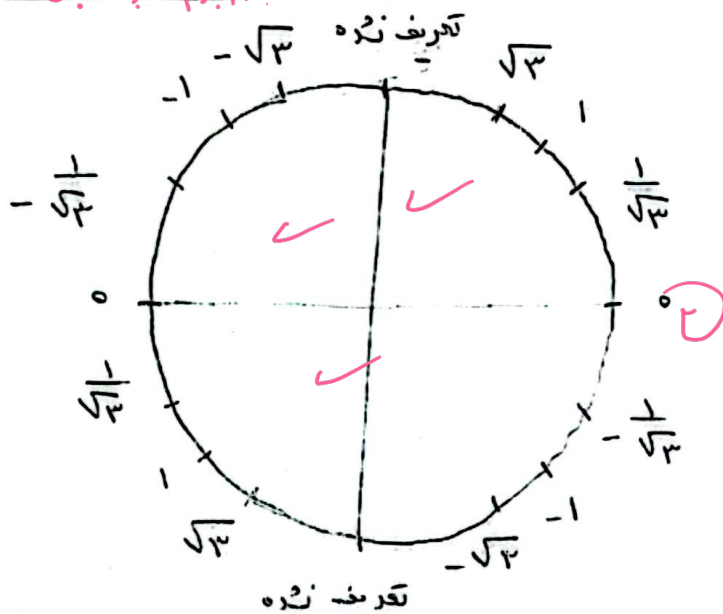




الف) $\frac{1}{2} + 1 + 2 \times (-1) = \frac{1}{2} - 1 = -\frac{1}{2}$

$$\frac{\sqrt{2}}{2} - \frac{\sqrt{2}}{2} + \frac{\sqrt{2}}{2} - \frac{\sqrt{2}}{2} + \dots + \frac{\sqrt{2}}{2} - \frac{\sqrt{2}}{2} + \frac{\sqrt{2}}{2} - \frac{\sqrt{2}}{2} + \dots$$

$$2) \quad \frac{5}{2} - \frac{3}{5} = \frac{2}{5} + \frac{2}{5} = \frac{4}{5} - 1 \times 1 + 1 \times \frac{1}{5} = \frac{1}{5}$$

$$\Rightarrow: \cos 0 + \sin \left(\cancel{\pi} \times \frac{1}{\cancel{r}} \right) \rightarrow 1 + 1 = 2$$

$$a^r + ra = ra + a + r \rightarrow a^r + a - r = 0 \rightarrow (a+r)(a-1) = 0$$

$$f(1) = 1 + 1 = 2$$

$$6 \times 1 + 1 + 1 = 8$$

$$a = -2 \quad \checkmark$$

$$\left. \begin{array}{l} x+1, r \quad | \quad n+1, r-1 \\ x, r \quad | \quad x, r-1 \end{array} \right\} n=-1 \rightarrow r-b=a-r$$

الف) $x^3 - 4x^2 \neq 0 \rightarrow x^2(x - 4) \neq 0 \rightarrow x \neq 0$

$$\hookrightarrow n - \varepsilon \neq 0 \rightarrow n \neq \varepsilon \quad \text{DF} = R - \{0, \varepsilon\}$$

(ب) تفکیک بر $x^3 + 2x^2 + x + 2 \neq 0 \rightarrow x^2(x+2) + (x+2)$

$$* \quad (x+r)(x^r+1) \neq 0 \quad x \neq -r \quad x^r \neq -1 \quad \text{Def } R - \{-r\}$$

۱۵) $x^2 - 1 \geq 0$ $x^2 \geq 1$ $x \geq 1$ و $x \leq -1$ $PF = (-\infty, -1] \cup [1, +\infty)$ (۴)

۱۶) $4 - 2x \geq 0 \rightarrow 4 \geq 2x \rightarrow 2 \geq x$
 $4x - 2 \geq 0 \rightarrow 4x \geq 2 \rightarrow 2x \geq 1 \rightarrow x \geq \frac{1}{2}$
 مخرج نباید منفی شود
 $PF = [\frac{1}{2}, 2]$ (۱، ۲۵)

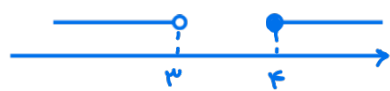
۱۷) $4x - a \geq 0 \rightarrow x \geq \frac{a}{4}$ $2a \leq x \leq \frac{b}{3}$ $[\frac{a}{4}, \frac{b}{3}]$
 $b - 2x \geq 0 \rightarrow \frac{b}{2} \geq x$
 $\frac{a}{4} = 2 \rightarrow a = 8$
 $\frac{b}{2} = 2 \rightarrow b = 4$
 $\frac{b}{a} = \frac{4}{8} = \frac{1}{2}$ (۲)

۱۸) الف) $\frac{(x-3)(x+2)}{(x^2-9)(x^2-4)} \geq 0$
 $x = 3, x = -2, x^2 = 9, x^2 = 4$
 $x = \pm 3, x = \pm 2$
 $PF = (-\infty, -3) \cup (-2, 2) \cup (3, +\infty) - \{3\}$ (۱، ۱۵)

ب) $\frac{(x+1)(x^2-x-6)}{(x+1)(x^2+x-6)} \geq 0 \rightarrow \frac{(x-1)(x-3)(x+2)}{(x+1)(x+2)(x-2)} \geq 0$
 $PF = (-\infty, -3) \cup (-2, 2) \cup (3, +\infty)$

۹) الف) $2[x] - 4 \geq 0 \rightarrow 2[x] \geq 4 \rightarrow [x] \geq 2 \rightarrow x \geq 2$ $PF = [2, +\infty)$
 ب) $2[x] - 5 \geq 0 \rightarrow 2[x] \geq 5 \rightarrow [x] \geq \frac{5}{2} \rightarrow [x] \geq 2.5 \rightarrow x \geq 3$
 $PF = [3, +\infty)$ (۲)

۱۵) الف) $\frac{x+1}{x-2} \geq 0$ $x+1 \geq 0 \rightarrow x \geq -1$
 $|x-2| \neq 0 \rightarrow x \neq 2$
 $PF = [1, +\infty) - \{2\}$ (۱، ۲۵)



۱۵) ب) $[x] - 4 \geq 0 \rightarrow [x] \geq 4 \rightarrow x \geq 4$
 $2 - [x] \geq 0 \rightarrow 2 \geq [x] \rightarrow x < 3$
 $PF = \emptyset$
 $(-\infty, 2) \cup [4, +\infty)$

$$(9-الف) \quad y = \sqrt{x^2-1} + \sqrt{x-2}$$

عبارت زیر را سوال باید ناقصی باشد

$$x^2-1 \geq 0 \rightarrow x^2 \geq 1 \leadsto x \geq 1 \text{ و } x \leq -1$$

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

$$\leadsto x \geq 2 \leadsto D_f = [2, +\infty)$$

$$(9-ب) \quad y = \frac{\sqrt{4-3x}}{\sqrt{4x-3}}$$

عبارت زیر را سوال باید ناقصی و عبارت صفر مخالف صفر باشد...

$$4-3x \geq 0 \rightarrow x \leq \frac{4}{3}$$

$$4x-3 > 0 \rightarrow x > \frac{3}{4}$$

$$\leadsto \frac{3}{4} < x \leq \frac{4}{3} \leadsto D_f = (\frac{3}{4}, \frac{4}{3}]$$

$$(8-الف) \quad y = \sqrt{\frac{x^2-x-4}{x^4-13x^2+34}} \leadsto \frac{x^2-x-4}{x^4-13x^2+34} \geq 0 \leadsto \frac{(x-3)(x+2)}{(x^2-9)(x^2-4)} \geq 0$$

$$\frac{(x-3)(x+2)}{(x-3)(x+3)(x-2)(x+2)} \geq 0 \leadsto \begin{array}{c} -3 \quad * \quad 2 \quad * \\ + \cancel{0} - \cancel{0} - \cancel{0} + \cancel{0} + \end{array}$$

$$D_f = (-\infty, -3) \cup (2, 3) \cup (3, +\infty)$$

$$(10-الف) \quad y = \sqrt{\frac{x+1}{|x-4|}} + \sqrt{\frac{4-x}{x^2+2x+2}}$$

فقط مقربیت مفروضه!

$$\begin{cases} \frac{x+1}{|x-4|} \geq 0 \rightarrow x \geq -1, x \neq 4 \quad I \\ \frac{4-x}{x^2+2x+2} \geq 0 \rightarrow x \leq 4 \quad II \end{cases}$$

Δ < 0 و محاوره مثبت و بدون مقربیت

$$\xrightarrow{I \cap II} D_f = [-1, 4) \cup (4, 4] \subseteq [-1, 4] - \{4\}$$

ب-۱۰) $y = \sqrt{[u]-4} + \sqrt{2-[u]}$

I و II $\rightarrow D_f = \emptyset$ - هیچ عددی نداریم که از ۴ بزرگتر و ۳ کمتر باشد

$$\left\{ \begin{array}{l} [u]-4 \geq 0 \rightarrow u \geq 4 \text{ I} \\ \quad \hookrightarrow [u] \geq 4 \\ \\ 2-[u] \leq 0 \rightarrow u \leq 2 \text{ II} \\ \quad \hookrightarrow [u] \leq 2 \end{array} \right.$$