

یازدهم سپهر

تالیف شادابی

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$$\text{الف) } y = \frac{x+3}{x^3+x^2-11x+3} = \frac{(x+3)}{(x-1)(x+\frac{1}{2})(x-3)} \quad (1)$$

$$\begin{array}{r} x^3+x^2-11x+3 \mid \frac{x-1}{x^3+\omega x-3} \\ \hline \omega x^2-11x \\ -\omega x^2+\omega x \\ \hline -10x+3 \end{array} \quad \begin{array}{l} \rightarrow \\ (x-3)(x+\frac{1}{2}) \end{array}$$

$$D_x = 1R - \left\{1, -\frac{1}{2}, 3\right\}$$

$$\text{ب) } y = \frac{x+3}{x^3+9x^2+10x+3} = \frac{(x+3)}{(x+1)(x+3)(x+\frac{1}{3})} \quad \rightarrow \quad D_x = 1R - \left\{-1, -3, -\frac{1}{3}\right\}$$

$$\begin{array}{r} x^3+9x^2+10x+3 \mid \frac{x+1}{x^3+7x+3} \\ \hline 2x^2+10x \\ -2x^2-2x \\ \hline 12x+3 \end{array} \quad \begin{array}{l} \rightarrow \\ (x+\frac{1}{3})(x+3) \end{array}$$

$$\text{ج) } y = \frac{x+3}{x^3-7x^2+7x-1} = \frac{(x+3)}{(x^2-x+1)(x-1)} \quad \rightarrow \quad D_x = 1R - \left\{1\right\} \quad (2)$$

$$\begin{array}{r} x^3-7x^2+7x-1 \mid \frac{x-1}{x^3-x+1} \\ \hline -x^2+8x-2 \\ +x^2-x \\ \hline 7x-2 \end{array}$$

Arman

$$4) y = \sqrt{\frac{x+r}{x^2-rx+r-1}} = \sqrt{\frac{(x+r)}{(x^2-x+1)(x-1)}}$$

$$\frac{(x+r)}{(x^2-x+1)(x-1)} \geq 0$$

$$+ \frac{-r}{x-1} + \frac{1}{x-1}$$

$$D_x = \mathbb{R} - (-r, 1]$$

$$y = \frac{r}{x^2 - \omega |x-1| - rx + \omega}$$

(P)

$$x^2 - \omega |x-1| - rx + \omega = 0 \quad x \geq 1$$

$$x^2 + \omega x - \omega - rx + \omega = x^2 + \omega x - rx = 0$$

$$x = 0, -\omega$$

$$x = r, \omega$$

$$D_x = \mathbb{R} - \{r, \omega\}$$

$$5) y = \sqrt{[-x]-r} \rightarrow [-x]-r \geq 0$$

(P)

$$[-x] \geq r$$

$$x \leq -r$$

$$x \leq -r$$

$$x \leq -r$$

$$x \leq -r$$

$$D_x = (-\infty, -r]$$

$$6) \frac{\omega x^2 + 4}{[x]^2 - r[x] - r}$$

$$[x] = t$$

$$t^2 - rt - r = 0$$

$$D_x = \mathbb{R} - (-1, 0) \cup [r, \infty)$$

$$(t-r)(t+1) = 0 \rightarrow t = r, -1$$

$$-1 \leq x < 0 \leftarrow [x] = -1$$

$$r \leq x < 2 \leftarrow [x] = r$$

$$[-1, 0) \cup [r, 2)$$

Arman

Subject : ()

Date :

$$الف) y = \sqrt{\left[n - \frac{1}{p}\right] + \left[n + \frac{1}{p}\right]} = \sqrt{\left[n - \frac{1}{p}\right] + \left[n - \frac{1}{p}\right] + 1}$$

(5)

(1, 20)

$$= \sqrt{2\left[n - \frac{1}{p}\right] + 1} \quad 2\left[n - \frac{1}{p}\right] + 1 \geq 0$$

$$\left[n - \frac{1}{p}\right] \geq -\frac{1}{2}$$

به قراینات بهالت به چیزی بهرگفته صدای صفر باشد پس آن چیز
 بهرگفته صدای صفر است مثلاً $n=5$ در ناصدا صدق میکند
 $\left[n - \frac{1}{p}\right] \geq 0 \rightarrow 0 \leq n - \frac{1}{p} < 1 \rightarrow n - \frac{1}{p} \geq 0 \rightarrow n \geq \frac{1}{p}$

$$D_n = \left[\frac{1}{p}, \frac{f}{p}\right)$$

$$\frac{1}{p} \leq n < \frac{f}{p}$$

$$ب) y = \sqrt{\left[n - \frac{1}{p}\right] + \left[\frac{1}{p} - n\right]} \xrightarrow{n - \frac{1}{p} = t} \sqrt{[t] + [-t]}$$

$$[t] + [-t] \geq 0$$

$$D_n = \left\{ n \mid n = k + \frac{1}{p}, k \in \mathbb{Z} \right\} \quad t \in \mathbb{Z} \rightarrow \left(n - \frac{1}{p}\right) \in \mathbb{Z}$$

$$n \in \mathbb{Z} + \frac{1}{p}$$

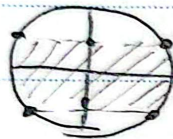
الف) $y = \frac{\cot n + 1}{\tan n + 1} \rightarrow \tan n = -1$

④

1, 5

$n \neq \frac{k\pi}{p}$
 $D_n = \mathbb{R} - \left\{ k\pi + \frac{\pi}{2}, k\pi - \frac{\pi}{2} \right\}$
 $\cot n, \tan n$ بايد تعريف شوند.

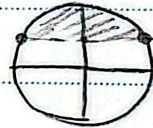
ب) $y = \sqrt{1 - \epsilon \sin^2 n} \rightarrow 1 - \epsilon \sin^2 n \geq 0 \rightarrow \sin^2 n \leq \frac{1}{\epsilon} \rightarrow -\frac{1}{\sqrt{\epsilon}} \leq \sin n \leq \frac{1}{\sqrt{\epsilon}}$



$$D_n = \left[k\pi - \frac{\pi}{4}, k\pi + \frac{\pi}{4} \right]$$

الف) $y = \sqrt{1 - \epsilon \sin^2 n} \rightarrow 1 - \epsilon \sin^2 n \geq 0 \rightarrow \sin^2 n \leq \frac{1}{\epsilon}$

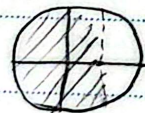
⑤



$$D_n = \left[k\pi + \frac{\pi}{4}, k\pi + \frac{5\pi}{4} \right]$$

ب) $y = \sqrt{1 - \epsilon \cos^2 n} \rightarrow 1 - \epsilon \cos^2 n \geq 0 \rightarrow \cos^2 n \leq \frac{1}{\epsilon}$

⑥



$$D_n = \mathbb{R} - \left(k\pi - \frac{\pi}{4}, k\pi + \frac{\pi}{4} \right)$$

$$\text{الف) } y = \arcsin(x^2 + 1)$$

(1) $1, \sqrt{2}$

$$-1 \leq x^2 + 1 \leq 1 \rightarrow -2 \leq x^2 \leq 0$$

$$x^2 + 1 \geq 0$$

$$x^2 + 1 \leq 0$$

$$(x+1)(x+1) \geq 0$$

$$x = 0, -1$$

$$\frac{-1}{+} \frac{-1}{-} \frac{+}{+}$$

$$\frac{-1}{+} \frac{0}{-} \frac{+}{+}$$

$$(-\infty, -1] \cup [-1, +\infty)$$

$$[-1, 0]$$



نیم تقسیم بندی بر حسب ...

$$D_n = [-1, 1] \cup [1, +\infty)$$

$$\text{ب) } \cos y = \sqrt{8 - x^2} \rightarrow -1 \leq \sqrt{8 - x^2} \leq 1$$

$$8 - x^2 \geq 0$$

$$0 \leq 8 - x^2 \leq 1$$

$$x \leq \sqrt{8}$$

$$-2 \leq -x \leq -2$$

$$\sqrt{8} \leq x \leq \sqrt{8}$$

$$D_n = [\sqrt{8}, \sqrt{8}]$$

الف) $y = \log_p (1 - \log_p^n)$

(9)

$$1 - \log_p^n > 0$$

$$\log_p^n < 1$$

$$n > 0$$

$$n < p$$

$$D_n = 0 < n < p$$

ب) $\log_p (1 - \log_{\frac{1}{p}}^n)$

$$1 - \log_{\frac{1}{p}}^n > 0 \rightarrow n < \frac{1}{p}$$

$$n > 0$$

$$D_n = 0 < n < \frac{1}{p}$$

ج) $y = \sqrt[p]{\frac{x^n - n^r}{p}} - 1 \rightarrow \frac{x^n - n^r}{p} > 0$

(10)

$$\frac{x^n - n^r}{p} > 0$$

$$x^n - n^r > 0 \rightarrow (x - n)(n - 1) \leq 0$$

$$\frac{1}{p} > 0$$

$$D_n = [1, p]$$

$$ج) y = \left(\frac{r_{n+0}}{r_{n+1}} \right)!$$

$$\frac{r_{n+0}}{r_{n+1}} \in W$$

↓

$$D_n = \left\{ n / n = \frac{\sum K - 0}{r - rK}, K \in W \right\}$$

$$K \in \frac{\sum W - 0}{r - rW}$$

$$الف - ۵) \left[n - \frac{1}{p} \right] + \left[n + \frac{r}{p} \right] \geq 0 \xrightarrow{+1} \left[n - \frac{1}{p} \right] + 1 + \left[n + \frac{r}{p} \right] \geq 1$$

$$\left[n + \frac{r}{p} \right] + \left[n + \frac{r}{p} \right] \geq 1 \rightarrow \left[n + \frac{r}{p} \right] \geq \frac{1}{2} \xrightarrow{\text{اولین عدد صحیح بزرگتر از } \frac{1}{2} \text{ برابر یک است!}} n + \frac{r}{p} \geq 1$$

$$n > \frac{1}{p} \rightarrow D_f = \left[\frac{1}{p} + \infty \right)$$

$$الف - ۶) y = \frac{\cot x + 1}{\tan x + 1}$$

نقاط نامعلوم را در دایره
مختصات مشخص میکنیم.

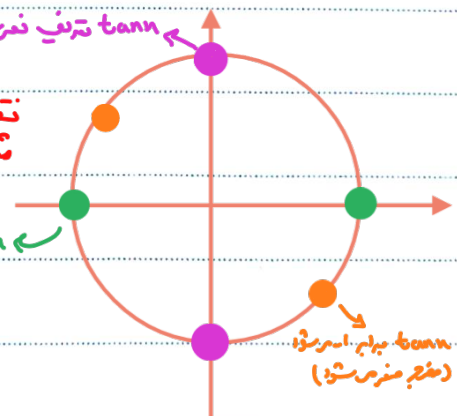
cot x تعریف نمیشود

tan x تعریف نمیشود

$$x \neq k\pi + \frac{\pi}{2}$$

$$x \neq k\pi + \frac{\pi}{2} \cup x \neq k\pi$$

$$\rightarrow x \neq \frac{k\pi}{2} \rightarrow D_f = \mathbb{R} - \left\{ \frac{k\pi}{2}, k\pi + \frac{\pi}{2} \right\}$$



$$8 - \text{الف} -) -1 \leq x^r + w_n + 1 \leq 1 \xrightarrow{\frac{q}{\varepsilon} - \frac{q}{\varepsilon}} -1 \leq x^r + w_n + \frac{q}{\varepsilon} - \frac{q}{\varepsilon} \leq 1$$

$$\frac{1}{\varepsilon} \leq x^r + w_n + \frac{q}{\varepsilon} \leq \frac{q}{\varepsilon} \rightarrow \frac{1}{\varepsilon} \leq \left(x + \frac{w}{r}\right)^r \leq \frac{q}{\varepsilon}$$

$$\int \left(x + \frac{w}{r}\right)^r \leq \frac{q}{\varepsilon} \rightarrow -\frac{r}{r} \leq x + \frac{w}{r} \leq \frac{r}{r} \rightarrow -r \leq x \leq 0 \quad I$$

$$\int \left(x + \frac{r}{r}\right)^r \geq \frac{1}{\varepsilon} \rightarrow x + \frac{r}{r} \geq \frac{1}{r} \rightarrow x \geq -1 \quad \leq \quad x + \frac{r}{r} \leq -\frac{1}{r} \rightarrow x \leq -r \quad II$$

$$I \cap II \rightarrow D_f = [-r, -r] \cup [-1, 0]$$