

باردوم سیرا

تالیف سیرا

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$$\text{الف) } y = \frac{x+3}{x^3 + 3x^2 - 12x + 3} = \frac{(x+3)}{(x-1)(x+\frac{1}{3})(x-3)} \quad (1)$$

$$\begin{array}{r} x^3 + 3x^2 - 12x + 3 \mid \frac{x-1}{x^3 + \omega x^2 - 3} \\ \hline \omega x^2 - 12x + 3 \\ - \omega x^2 + \omega x \\ \hline - 3x + 3 \end{array} \quad \begin{array}{l} \searrow \\ D_x = \mathbb{R} - \left\{1, -\frac{1}{3}, 3\right\} \\ \searrow \\ (x-3)(x+\frac{1}{3}) \end{array}$$

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

$$\begin{array}{r} x^3 + 9x^2 + 10x + 3 \mid \frac{x+1}{x^3 + 3x^2 + 3x + 1} \\ \hline 6x^2 + 7x + 2 \\ - 6x^2 + 18x + 6 \\ \hline 11x + 4 \end{array} \quad \begin{array}{l} \searrow \\ (x+\frac{1}{3})(x+3) \end{array}$$

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

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

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

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

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

$$D_x = IR - (-r, 1]$$

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

(P)

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

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

$$x = r, \omega$$

$$x = 0, -r$$

$$D_x = IR - \{-r, 0, r, \omega\}$$

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

(P)

$$[-x] \geq r$$

$$x \leq -r$$

$$x \leq -r$$

$$x \leq -r$$

$$x \leq -r$$

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

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

$$[x] = t$$

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

$$\rightarrow D_x = IR - (-1, 0) \cup [r, \infty)$$

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

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

$$r \leq x < 2$$

$$[x] = r$$

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

Arman

Subject : ()

Date :

$$a) y = \sqrt{\left\lfloor n - \frac{1}{p} \right\rfloor + \left\lfloor n + \frac{1}{p} \right\rfloor} = \sqrt{\left\lfloor n - \frac{1}{p} \right\rfloor + \left\lfloor n - \frac{1}{p} \right\rfloor + 1}$$

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

$$\left\lfloor n - \frac{1}{p} \right\rfloor \geq -\frac{1}{2}$$

$$\left\lfloor n - \frac{1}{p} \right\rfloor \geq 0 \rightarrow 0 \leq n - \frac{1}{p} < 1$$

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

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

$$b) y = \sqrt{\left\lfloor n - \frac{1}{p} \right\rfloor + \left\lfloor \frac{1}{p} - n \right\rfloor} \xrightarrow{n - \frac{1}{p} = t} \sqrt{\left\lfloor t \right\rfloor + \left\lfloor -t \right\rfloor}$$

$$\left\lfloor t \right\rfloor + \left\lfloor -t \right\rfloor \geq 0$$

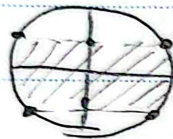
$$D_n = \left\{ n \mid n = k + \frac{1}{p}, k \in \mathbb{Z} \right\} \quad t \in \mathbb{Z} \rightarrow \left(n - \frac{1}{p} \right) \in \mathbb{Z}$$

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

الـ) $y = \frac{\cot n + 1}{\tan n + 1} \rightarrow \tan n = -1$ (4)

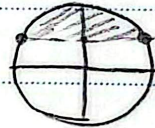
$D_n = \mathbb{R} - \left\{ K\pi + \frac{\pi}{2}, K\pi - \frac{\pi}{2} \right\}$

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



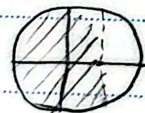
$D_n = \left[K\pi - \frac{\pi}{4}, K\pi + \frac{\pi}{4} \right]$

الـ) $y = \sqrt{1 - \varepsilon \sin^2 n} \rightarrow 1 - \varepsilon \sin^2 n \geq 0 \rightarrow \sin^2 n \leq \frac{1}{\varepsilon}$ (5)



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

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



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

$$\text{الف) } y = \arcsin(x^r + x_{n+1})$$

(1)

$$-1 \leq x^r + x_{n+1} \leq 1 \rightarrow -1 \leq x^r + x_n \leq 0$$

$$x^r + x_{n+1} \geq 0$$

$$x^r + x_n \leq 0$$

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

$$x = 0, -r$$

$$\begin{array}{c} -r \quad -1 \\ + \quad - \quad + \end{array}$$

$$\begin{array}{c} -r \quad 0 \\ + \quad - \quad + \end{array}$$

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

$$[-r, 0]$$

$$D_n = [-r, r]$$

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

$$8-r_n \geq 0$$

$$0 \leq 8-r_n \leq 1$$

$$r_n \leq 8$$

$$-8 \leq -r_n \leq -7$$

$$r_n \leq 8 \quad \text{and} \quad r_n \geq 7$$

$$D_n = [7, 8]$$

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

(10)

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

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

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

$$D_n = [1, p]$$

$$4) y = \left(\frac{r_{n+0}}{r_{n+1}} \right) ! \quad \frac{r_{n+0}}{r_{n+1}} \in W$$

↓

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

— Arman —