

۱۹۱۷۵ امین خوب نوبت

تالیف شماره ۳

یازدهم دفتر A

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الف) ۱) $x-1$ به مجموع ضرایب صفر

$$2x^2 + 4x - 3 \sim (x-1) \underbrace{(2x-1)}_{\frac{1}{2}} \underbrace{(x+3)}_{-3}$$

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

ب) $x+1$ به مجموع ضرایب توان اندک مثل فرد

$$2x^2 + 7x + 2 \sim (x+1) \underbrace{(2x+1)}_{-\frac{1}{2}} \underbrace{(x+2)}_{-2}$$

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

الف) ۲) $x^2 - x + 1$

$$\underbrace{(x-1)}_1 \underbrace{(x^2 - x + 1)}_{\Delta < 0} \quad D_f = R - \{1\}$$

$$\sqrt{x+3} \rightarrow (-\infty, -3] \quad \begin{matrix} (x-1) & (x^2 - x + 1) \\ \text{①} & \text{②} \end{matrix}$$

$$D_f = (-\infty, -3] \cup (1, +\infty)$$

۳) $x^2 - 5(x-1) - 2x + 4 = 0 \sim x^2 - 7x + 9 = 0$ $\begin{matrix} x \geq 1 & \text{①} & x^2 - 5(x-1) - 2x + 4 = 0 \sim x^2 - 7x + 9 = 0 \\ x < 1 & \text{②} & x^2 - 5(-x+1) - 2x + 4 = 0 \sim x^2 + 3x = 0 \end{matrix}$

$$D_f = R - \left\{ -3, 0, 2, 4 \right\}$$

الف) ۴) $\sqrt{-x} - 2 \geq 0 \sim [-x] - 2 \geq 0 \sim [-x] \geq 2 \rightarrow -x \geq 2, x \leq -2$ $D_f = (-\infty, -2]$

ب) $[x]^2 - 2[x] - 3 \neq 0 \sim [x]^2 - 2[x] - 3 = 0 \sim \underbrace{([x]-3)}_{\frac{1}{2}} \underbrace{([x]+1)}_{-1}$

$[x] = 3 \rightarrow 3 \leq x < 4 \quad [x] = -1 \rightarrow -1 \leq x < 0$

$R = ([-1, 0) \cup [3, 4)) \cup (-\infty, -1) \cup [0, 2) \cup [4, +\infty)$

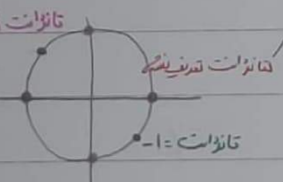
الف) ۵) $\left[x - \frac{1}{x} \right] + \left[x + \frac{1}{x} \right] \geq 0 \sim 2 \left[x + \frac{1}{x} \right] - 1 \geq 0 \quad \left[x + \frac{1}{x} \right] \geq \frac{1}{2}$

$x + \frac{1}{x} \geq 1 \sim x \geq \frac{1}{x} \sim \left[\frac{1}{x} \right] \geq 1$

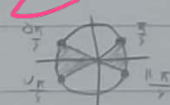
ب) $\sqrt{\left[x - \frac{1}{x} \right] + \left[\frac{1}{x} - x \right]} \quad [x] + [-x] \quad \text{if } x \in \mathbb{Z}, 0 \quad \text{if } x \notin \mathbb{Z}, -1$

$D_f = \left\{ x \mid x = k + \frac{1}{k}, k \in \mathbb{Z} \right\}$

الف) ۹) $\frac{\cos x}{\sin x} + 1 \geq 0 \sim \frac{\sin x}{\cos x} + 1 \geq 0 \sim \tan x \geq -1$



$R = \left\{ k\pi, k\pi + \frac{\pi}{4}, k\pi + \frac{3\pi}{4} \right\}$



۱۷۵۰ $1 - \sqrt{3} \sin x \geq 0 \rightarrow \sqrt{3} \sin x \leq 1 \rightarrow \sin x \leq \frac{1}{\sqrt{3}} \rightarrow -\frac{1}{\sqrt{3}} \leq \sin x \leq \frac{1}{\sqrt{3}}$

$\left[-\frac{\pi}{4}, \frac{\pi}{4} \right] \cup \left[\frac{3\pi}{4}, \frac{5\pi}{4} \right]$

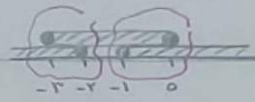
پراکنده ها را ننویس

Mege NOTE

٧) الف) $r \sin x - 1 \geq 0 \leadsto \sin x \geq \frac{1}{r}$  $\left[\frac{\pi}{r}, \frac{\pi}{r}\right] \cup \left[rk\pi + \frac{\pi}{r}, rk\pi + \frac{\pi}{r}\right]$

ب) $1 - r \cos x \geq 0 \leadsto \cos x \leq \frac{1}{r}$  $\left[\frac{\pi}{r}, \frac{\pi}{r}\right] \cup \left[rk\pi + \frac{\pi}{r}, rk\pi + \frac{\pi}{r}\right]$
 حيث $[-1, 1]$ D

٨) الف) $\arcsin(x^r + rx + 1) \leadsto -1 \leq x^r + rx + 1 \leq 1$

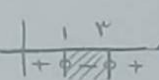
$-1 \leq x^r + rx + 1 \leadsto 0 \leq x^r + rx + 2$ $\frac{(x+1)(x+r)}{-1}$ $\frac{-r-1}{x^r - r}$ 
 $x^r + rx + 1 \leq 1 \leadsto x^r + rx \leq 0$ $\frac{x(x+r)}{-r}$ $\frac{-r}{x^r - r}$ D
 $D_f = [-r, -r] \cup [-1, 0]$

ب) $-1 \leq \sqrt{a - rx} \leq 1 \leadsto 0 \leq a - rx \leq 1 \leadsto -a \leq -rx \leq -r \leadsto \frac{x}{r} \geq \frac{r}{r}$

$r \leq x \leq r$ $\leadsto D_f = [r, r]$

٩) الف) $y = \log_r \left(\frac{1 - \log_r x}{x} \right) \leadsto \begin{cases} x > 0 \\ 1 - \log_r x > 0 \leadsto \log_r x < 1 \leadsto x < r \\ 0 < x < r \end{cases}$ D

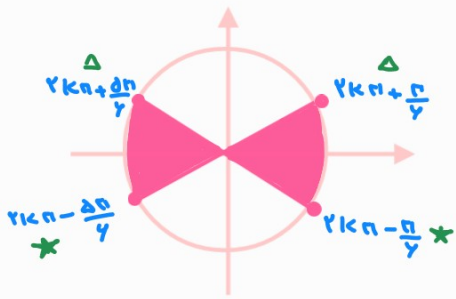
ب) $y = \log_r \left(\frac{1 - \log_r \frac{x}{r}}{\frac{x}{r}} \right) \leadsto \begin{cases} x > 0 \\ 1 - \log_r \frac{x}{r} > 0 \leadsto \log_r \frac{x}{r} < 1 \leadsto \frac{x}{r} < r \leadsto x < r^2 \\ \left(\frac{1}{r} > 0 \right) \end{cases}$ D

١٠) الف) $\sqrt{\frac{rx - x^r}{r}} \geq 0 \leadsto \frac{rx - x^r}{r} \geq 0 \leadsto rx - x^r \geq 0 \leadsto x^r - rx + r = 0 \leadsto \frac{(x-1)(x-r)}{-1}$  D

ب) $\frac{rx + a}{rx + r} \in W \leadsto rx + a \in rxW + rW \leadsto rx - rxW \in rW - a \leadsto x(r - rW) \in rW - a$

$x \in \frac{rW - a}{r - rW} \leadsto \left\{ x \mid x = \frac{rW - a}{r - rW} \right\}$ D

4- ب) $1 - r \sin^2 n \geq 0 \rightarrow r \sin^2 n \leq 1 \rightarrow \sin^2 n \leq \frac{1}{r} \rightarrow -\frac{1}{r} \leq \sin n \leq \frac{1}{r}$



$\rightarrow D_f = [\kappa n - \frac{\Delta}{r}, \kappa n + \frac{\Delta}{r}]$