

Date _____ Subject _____

9. $\frac{y}{x^2 - \Delta |x-1| - 2x + \Delta}$ - ٢

$x > 0 \rightarrow x^2 - \Delta x + \Delta - 2x + \Delta \neq 0 \rightarrow x^2 - 2x + 2\Delta \neq 0 \rightarrow (x-1)(x-\Delta) \neq 0$
 $\rightarrow x \neq 1, \Delta$

$x^2 + \Delta x - \Delta - 2x + \Delta \neq 0 \rightarrow x^2 + 3x \neq 0 \rightarrow x(x+3) \neq 0$
 $\rightarrow x \neq 0, -3$

pf: $R - \{1, \Delta, 0, -3\}$ (٢)

الف) $[-x] - 2 \geq 0 \rightarrow [-x] \geq 2 \rightarrow (-\infty, -2]$ - ٢

دقت! $[x] = -1 \rightarrow x \in [-1, 0)$

ب) $\frac{\Delta x^2 + 4}{[x]^2 - 2[x] - 3} \rightarrow [x]^2 - 2[x] - 3 \neq 0$ (١٧٥)

$[x]^2 - 2[x] - 3 = ([x]-3)([x]+1) \neq 0 \rightarrow [x] \neq 3, -1$
 جواب برآورد حسب به سؤال $(a+1)$ و a است! (هـ-د)

$\rightarrow x \neq (-2, -1] \cup [3, 4) \rightarrow \text{pf: } R - ((-2, -1] \cup [3, 4))$

الف) ج. $\sqrt{[x - \frac{1}{x}]} + [x + \frac{1}{x}] \rightarrow \sqrt{[x - \frac{1}{x}]} + [x + \frac{1}{x}] + 1$ - ٥

$\rightarrow \sqrt{2[x - \frac{1}{x}] + 1} \rightarrow 2[x - \frac{1}{x}] + 1 \geq 0$

$\rightarrow [x - \frac{1}{x}] \geq -\frac{1}{2} \rightarrow [x - \frac{1}{x}] \geq 0 \rightarrow x \geq \frac{1}{x} \rightarrow \text{pf: } [\frac{1}{x}, +\infty)$

ب) ج. $\sqrt{[x - \frac{1}{x}]} + [x + \frac{1}{x}] \rightarrow \sqrt{[+]} + [-] \rightarrow [+] + [-] \geq 0$ (٢)

$\rightarrow t \in \mathbb{Z} \rightarrow \text{جواب} = 0 \vee \rightarrow x - \frac{1}{x} \in \mathbb{Z} \rightarrow x \in \mathbb{Z} \setminus \{0\}$

$t \in \mathbb{Z} \rightarrow \text{جواب} = -1 \vee \rightarrow \text{pf: } \{x + \frac{1}{x} \mid x \in \mathbb{Z}\}$

الف) $y, \frac{\cot x + 1}{\tan x + 1} \rightarrow \cot x \rightarrow x \neq \pi, \pi$
 $\tan x \rightarrow x \neq \frac{\pi}{2}, \frac{3\pi}{2}$

-4

1, 28

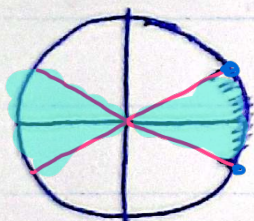
$\tan x + 1 \neq 0 \rightarrow \tan x \neq -1 \rightarrow x \neq \frac{3\pi}{4}, \frac{5\pi}{4}$

میرا دستور کنی یا کامل ننوشتی!

Def. $R = \left\{ \pi, \pi, \frac{\pi}{2}, \frac{3\pi}{2}, \frac{3\pi}{4}, \frac{5\pi}{4} \right\}$

ب) $y, \sqrt{1 - \frac{1}{2} \sin^2 x} \rightarrow 1 - \frac{1}{2} \sin^2 x \geq 0 \rightarrow 1 \geq \frac{1}{2} \sin^2 x$

$\rightarrow \frac{1}{2} \geq \sin^2 x \rightarrow \frac{1}{\sqrt{2}} \geq \sin x \rightarrow \sin x \leq \frac{1}{\sqrt{2}}$



Def. $\left[\pi - \frac{\pi}{4}, \pi + \frac{\pi}{4} \right]$

بانه قابل قبول د

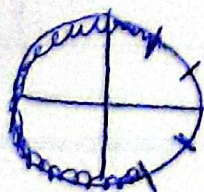
راه حل صفی بعد!

الف) $y, \sqrt{2 \sin x - 1} \rightarrow 2 \sin x - 1 \geq 0 \rightarrow 2 \sin x \geq 1$

$\rightarrow \sin x \geq \frac{1}{2} \rightarrow \text{Def. } \left[\frac{\pi}{6}, \frac{5\pi}{6} \right]$

ب) $y, \sqrt{1 - 2 \cos x} \rightarrow 1 - 2 \cos x \geq 0 \rightarrow 1 \geq 2 \cos x$

$\rightarrow \frac{1}{2} \geq \cos x \rightarrow \text{Def. } \left[\frac{\pi}{3}, \frac{5\pi}{3} \right]$



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الف) $y = \arcsin(x^r + rx + 1) \rightarrow x^r + rx + 1 \leq 1 \quad - \wedge$

$$\rightarrow 0 \leq x^r + rx + 1 \rightarrow 0 \leq (x+r)(x+1) \quad \frac{x+1}{x+1} - \frac{r}{x+1} - \frac{1}{x+1}$$

$$x^r + rx \leq 0 \rightarrow x(x+r) \leq 0 \quad \frac{x+1}{x+1} - \frac{r}{x+1} - \frac{1}{x+1}$$

$$Df: ((-\infty, -r] \cup [-1, +\infty)) \cap [-r, 0], \quad [\cancel{r}, -r] \cup [-1, 0]$$

ب) $y = \sqrt{4-x} \rightarrow -1 \leq \sqrt{4-x} \rightarrow 0 \leq \sqrt{4-x}$

$$\rightarrow 0 \leq 4-x \rightarrow x \leq 4$$

$$\sqrt{4-x} \leq 1 \rightarrow 4-x \leq 1 \rightarrow x \leq 3 \rightarrow x \leq 3$$

$$Df: [1, 3] \quad \text{د}$$

الف) $\log_r(1 - \log_r x) \rightarrow 1 - \log_r x > 0 \quad 9$

$$\rightarrow 1 > \log_r x \rightarrow x > r, \quad x > 0 \rightarrow Df: (0, r)$$

$$\therefore \log_r (1 - \log_{\frac{1}{r}} x) \rightarrow 1 - \log_{\frac{1}{r}} x > 0 \rightarrow 1 > \log_{\frac{1}{r}} x$$

9

$$\rightarrow \frac{1}{r} < x \rightarrow \rho f \in \left(\frac{1}{r}, +\infty \right)$$

u

$$x > 0$$

الف) $y_s \sqrt{\frac{r^n - n^r}{r - 1}}$ $\frac{r^n - n^r}{r - 1} \geq 0$

-10

$$\rightarrow \frac{r^n - n^r}{r - 1} \geq 0, \quad \frac{r^n - n^r}{r - 1} \geq 0 \Rightarrow n^r - r^n \leq 0$$

$$\rightarrow \Rightarrow (n-r)(n-1) \geq 0 \quad \begin{array}{c} + \quad - \quad + \end{array} \quad \text{DF} \in [1, r]$$

ب) $y_s \left(\frac{r^n + \Delta}{r^n + r} \right) ! \rightarrow \frac{r^n + \Delta}{r^n + r} \in W$

$$\rightarrow n \in -\frac{rW - \Delta}{rW - r} \rightarrow n \in -\frac{rW + \Delta}{rW - r}$$

$$\rightarrow \text{DF} = \left\{ \frac{-rK + \Delta}{rK - r} \mid K \in W \right\}$$

ب- 4) $[n]^2 - 2[n] - 3 = 0 \xrightarrow{[n]=t} t^2 - 2t - 3 = 0 \rightarrow (t-3)(t+1) = 0$

$t=3 \rightarrow [n]=3 \rightarrow n \in [3, 4)$

$t=-1 \rightarrow [n]=-1 \rightarrow n \in [-1, 0)$

$\rightarrow D_f = (-\infty, -1) \cup [3, 4) \cup [4, +\infty)$

$\mathbb{R} - \left\{ \frac{1}{2} [3, 4) \cup [4, 5) \right\}$

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

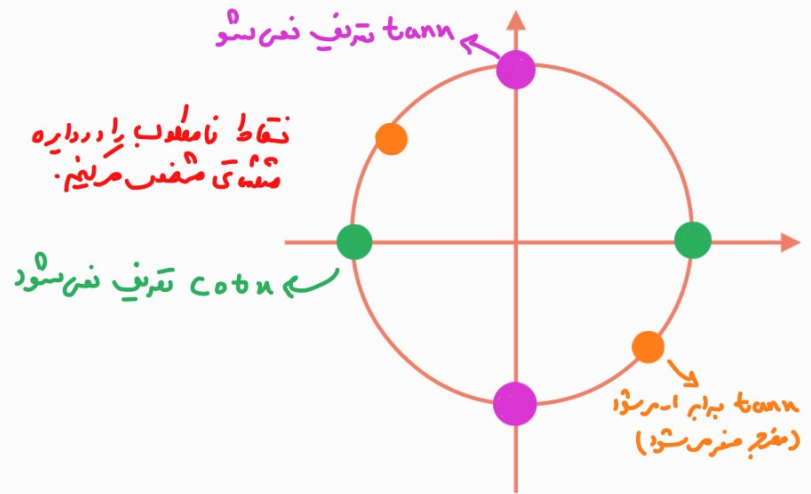
نقاط نامعلوم را در دایره
متناهی مشخص میکنیم.

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

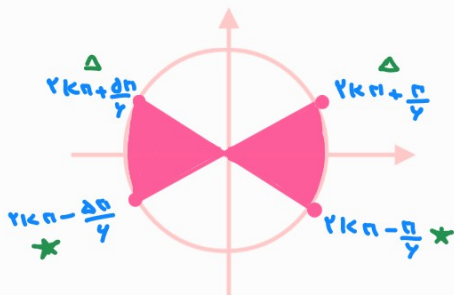
$n \neq k\pi + \frac{\pi}{4} \cup n \neq k\pi$

$\rightarrow n \neq \frac{k\pi}{4}$

$\rightarrow D_f = \mathbb{R} - \left\{ \frac{k\pi}{4}, k\pi + \frac{\pi}{4} \right\}$



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



$\rightarrow D_f = \left[k\pi - \frac{\pi}{6}, k\pi + \frac{\pi}{6} \right]$