

۱۳۵ جزوه و پاسخ‌هایی که در دستم باقی مانده بود

الف) $\frac{2n^2 + 2n^2 - 1n + 2}{n-1} = 2n^2 + 5n - 2 \leadsto 2n^2 + 5n - 2 \neq 0 \leadsto \Delta = 25 + 16 = 41$

ب) $\frac{2n^2 + 9n^2 + 10n + 2}{n+1} \leadsto n+1 \leadsto n \neq -1$
 $\frac{-5 \pm \sqrt{41}}{4} \leadsto \frac{1}{4} \leadsto D_F = R - \{1, -2, \frac{1}{4}\}$

$\leadsto 2n^2 + 7n + 2 \neq 0 \leadsto \Delta = 49 - 16 = 33 \leadsto \frac{-7 \pm \sqrt{33}}{4} \leadsto \frac{-1}{4} \leadsto D_F = R - \{1, -2, -\frac{1}{4}\}$

الف) $\frac{n^2 - 2n^2 + 2n - 1}{n-1} \leadsto n^2 - n + 1 \leadsto \Delta = 1 - 4 \leadsto$ ریشه ندارد $\leadsto D_F = R - \{1\}$

ب) $\frac{n+3}{n^2 - 2n^2 + 2n - 1} \geq 0 \leadsto n^2 - 2n^2 + 2n - 1 = (n-1)(n^2 - n + 1)$

$n^2 - n + 1 > 0 \quad \frac{n+3}{n-1} \geq 0 \leadsto n \leq -3 \quad n \neq 1 \quad D_F = (-\infty, -3] \cup (1, +\infty)$

$n^2 - 5|n-1| - 2n + 8 \neq 0 \xrightarrow{n \geq 1} n^2 - 5(n-1) - 2n + 8 = 0$

$n^2 - 7n + 13 = 0 \rightarrow (n-2)(n-5) = 0 \rightarrow n = 2, 5 \xrightarrow{n < 1} n^2 - 5(1-n) - 2n + 8 = 0$

$n^2 + 3n = 0 \rightarrow n(n+3) = 0 \rightarrow n = 0, -3$

$D_F = (-\infty, -3) \cup (-3, 0] \cup (0, 2) \cup (2, 5) \cup (5, +\infty)$

الف) $[-n] - 2 \geq 0 \leadsto [-n] \geq 2 \leadsto n \leq -2 \leadsto D_F = (-\infty, -2]$

$\Delta = 4 + 12 \rightarrow 16$

$[n]^2 - 2[n] - 2 \neq 0$

ب) $\frac{2 \pm 4}{2} \leadsto \frac{3}{-1} \leadsto D_F = R - \{3, -1\}$

$D_F = R - \{3, -1\}$

الف) $[n - \frac{1}{3}] \geq -[n + \frac{1}{3}] \quad \cdot \times \quad -\frac{1}{3} \times \quad -1 \times \quad \frac{1}{3} \times \quad \frac{1}{3} \checkmark \quad 1 \checkmark \quad 2 \checkmark$

ب) $D_F = (+\infty, 0) \quad | [n - \frac{1}{3}] \geq -[\frac{1}{3} - n] \leadsto [n - \frac{1}{3}] \geq 0 \leadsto n \geq \frac{1}{3}$

$n \geq \frac{1}{3} \leadsto D_F = (+\infty, \frac{1}{3}]$

سوال مشابه جزوه!
 باقی راه حل که در صفی بعد نوشته شده بود!

$\frac{\cos}{\sin} + 1 \rightarrow \sin, \cos \neq 0 \quad \frac{\sin}{\cos} \neq -1 \rightarrow \sin \neq -\cos$ $\frac{\sin}{\cos} + 1 \quad D_f = \mathbb{R} - \left\{ \frac{k\pi}{2} - \frac{\pi}{4} \right\}$	الف) $x \neq 180^\circ, 210^\circ$ 180°
$1 - \sqrt{\sin^2} \geq 0 \rightarrow 1 \geq \sqrt{\sin^2} \rightarrow \frac{1}{\sqrt{2}} \geq \sin^2 \rightarrow \frac{1}{\sqrt{2}} \geq \sin \rightarrow \frac{1}{\sqrt{2}} \geq \sin \geq -\frac{1}{\sqrt{2}}$ $D_f = \left[k\pi + \frac{\pi}{4}, k\pi + \frac{3\pi}{4} \right] \cup \left[2k\pi - \frac{\pi}{4}, 2k\pi + \frac{\pi}{4} \right]$	ب) استیلازه نباید از استیلازه بزرگتر باشد!
$\sqrt{\sin} - 1 \geq 0 \rightarrow \sqrt{\sin} \geq 1 \rightarrow \sin \geq \frac{1}{4} \rightarrow D_f = \left[k\pi + \frac{\pi}{6}, k\pi + \frac{5\pi}{6} \right]$	الف) 180°
$1 - \sqrt{\cos} \geq 0 \rightarrow 1 \geq \sqrt{\cos} \rightarrow \frac{1}{\sqrt{2}} \geq \cos \rightarrow D_f = \left[2k\pi + \frac{\pi}{4}, 2k\pi + \frac{7\pi}{4} \right]$	ب)
$-1 \leq x^2 + 3x + 1 \leq 1 \quad x^2 + 3x + 2 \geq 0 \rightarrow (x+1)(x+2) \geq 0$ $\rightarrow x \leq -2, x \geq -1 \quad x^2 + 3x \leq 0 \quad x(x+3) \leq 0$ $-3 \leq x \leq 0$ $D = [-3, -2] \cup [-1, 0]$	الف) صورت سوال با استیلازه نزنش! $0 \leq x^2 + 3x + 2 \leq 1$ $0 \leq x^2 + 3x \leq 1$ $0 \leq x(x+3) \leq 1$ $[-\sqrt{3}, -\sqrt{2}] \cup [\sqrt{2}, \sqrt{3}]$
$1 > 1.9^x \rightarrow x < 2 \rightarrow D_f = (-\infty, 2)$	الف) 180°
$1 > \log_{\frac{1}{2}} x \rightarrow \frac{1}{2} > x \rightarrow D_f = \left(\frac{1}{2}, +\infty \right)$	ب) 9
$e^{\frac{1}{3}x} - x^2 \geq 1 \rightarrow e^{\frac{1}{3}x} - x^2 \geq 3 \rightarrow -x^2 + \frac{1}{3}x - 3 \geq 0 \rightarrow a+b+c=0$ $\frac{1}{-b \pm \sqrt{b^2 - 4ac}}$ $D_f = [3, 1]$	الف) 180° ب)

الف - $\lceil n - \frac{1}{x} \rceil + \lceil n + \frac{2}{x} \rceil \geq 0 \xrightarrow{+1} \lceil n - \frac{1}{x} \rceil + 1 + \lceil n + \frac{2}{x} \rceil \geq 1$
 $\lceil n + \frac{2}{x} \rceil + \lceil n + \frac{2}{x} \rceil \geq 1 \rightarrow \lceil n + \frac{2}{x} \rceil \geq \frac{1}{2} \xrightarrow[\text{اولین عدد صحیح بزرگتر از}]{\text{نصف برابر یک است!}} n + \frac{2}{x} \geq 1$
 $n \geq \frac{1}{x} \rightarrow D_f = [\frac{1}{x}, +\infty)$

ب - $\lceil n - \frac{1}{x} \rceil + \lceil -n + \frac{1}{x} \rceil \geq 0$

مردانیم:

$\lceil n \rceil + \lceil -n \rceil \begin{cases} n \in \mathbb{Z} & 0 \checkmark \\ n \notin \mathbb{Z} & -1 \times \end{cases}$

$\rightarrow \lceil n - \frac{1}{x} \rceil \in \mathbb{Z} \rightarrow n \in \mathbb{Z} + \frac{1}{x}$

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

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

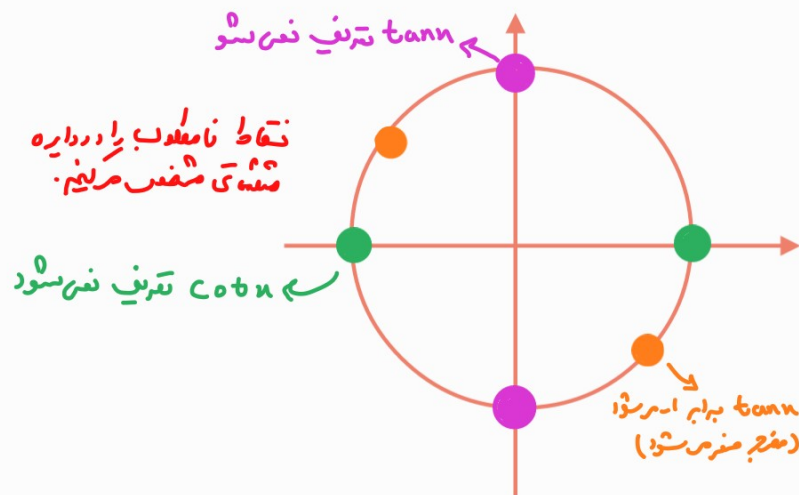
نقاط نامعلوم را در دایره
مستطقی مشخص خواهیم کرد.

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

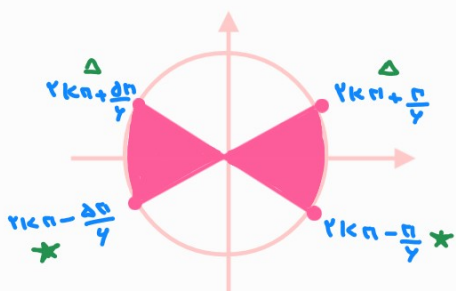
$x \neq k\pi + \frac{\pi}{2} \cup x \neq k\pi$

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

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

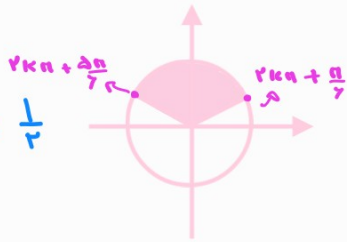


ب - $1 - 4 \sin^2 x \geq 0 \rightarrow 4 \sin^2 x \leq 1 \rightarrow \sin^2 x \leq \frac{1}{4} \rightarrow -\frac{1}{2} \leq \sin x \leq \frac{1}{2}$

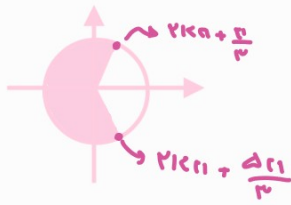


$\rightarrow D_f = \left[k\pi - \frac{\pi}{6}, k\pi + \frac{\pi}{6} \right]$

الف - $\sqrt{2} \sin n - 1 \geq 0 \rightarrow \sin n \geq \frac{1}{\sqrt{2}} \rightarrow Df = [rkn + \frac{\pi}{4}, rkn + \frac{3\pi}{4}]$



ب - $1 - \sqrt{2} \cos n \geq 0 \rightarrow \cos n \leq \frac{1}{\sqrt{2}} \rightarrow Df = [rkn + \frac{\pi}{4}, rkn + \frac{5\pi}{4}]$



ب - $\sqrt{\omega - 2n} \rightarrow \omega - 2n \geq 0 \rightarrow n \leq \frac{\omega}{2} \rightarrow Df = [r, \frac{\omega}{r}]$
 $-1 \leq \sqrt{\omega - 2n} \leq 1 \rightarrow \omega - 2n \leq 1 \rightarrow -2n \leq -\omega + 1 \rightarrow n \geq \frac{\omega - 1}{2}$
 همواره برقرار است ✓

الف - $y = \log_r (1 - \log_r^n)$ $\rightarrow \log_r^n \rightarrow n > 0$
 $\rightarrow 1 - \log_r^n > 0 \rightarrow \log_r^n < 1 \rightarrow n < r$

$Df = (0, r)$

ب - $y = \log_r (1 - \log_{\frac{1}{r}}^n)$ $\rightarrow \log_{\frac{1}{r}}^n \rightarrow n > 0$
 $\rightarrow 1 - \log_{\frac{1}{r}}^n > 0 \rightarrow \log_{\frac{1}{r}}^n < 1 \xrightarrow{\text{مناسب}} n > \frac{1}{r}$

$Df = (\frac{1}{r}, +\infty)$

ب - $\frac{rn + \omega}{rn + 1} \in W \rightarrow n \in -\frac{r\omega - \omega}{r\omega - r} \rightarrow n \in \frac{\omega - r\omega}{r\omega - r}$
 $Df = \{n | n = \frac{-rk + \omega}{rk - r}, k \in W\}$