

نام و نام خانوادگی: پارسا ضیائی کالیف شهابه: ۳ مقطع: یازدهم سیر B
 تاریخ: ۱۷/۲/۵۵

(۱) الف) $y = \frac{x+3}{2x^3+3x^2-11x+3}$ $\rightarrow 2x^3+3x^2-11x+3=0$ $\rightarrow 2x^3+3x^2-11x+3 \div (x-1)$
 $\rightarrow 2x^2+5x-8$ $\rightarrow 2x^2+5x-8 \div (x-1)$
 $\rightarrow 2x+7$ $\rightarrow 2x+7=0 \rightarrow x=-\frac{7}{2}$
 $\rightarrow x < \frac{1}{2}$
 $D_f = \mathbb{R} - \{1, -\frac{7}{2}\}$

ب) $y = \frac{x+3}{2x^3+9x^2+10x+3}$ $\rightarrow 2x^3+9x^2+10x+3=0$ $\rightarrow 2x^3+9x^2+10x+3 \div (x+1)$
 $\rightarrow 2x^2+7x+3$ $\rightarrow 2x^2+7x+3 \div (x+1)$
 $\rightarrow 2x+5$ $\rightarrow 2x+5=0 \rightarrow x=-\frac{5}{2}$
 $\rightarrow x = \begin{cases} -\frac{1}{2} \\ -\frac{5}{2} \end{cases}$
 $D_f = \mathbb{R} - \{-\frac{1}{2}, -\frac{5}{2}\}$

(۲) الف) $y = \frac{x+3}{x^3-2x^2+2x-1}$ $\rightarrow x^3-2x^2+2x-1=0$ $\rightarrow (x-1)(x^2-x+1)=0$ $\rightarrow x=1$ $\rightarrow D_f = \mathbb{R} - \{1\}$
 ب) $y = \sqrt{\frac{x+3}{x^3-2x^2+2x-1}}$ $\rightarrow \frac{x+3}{x^3-2x^2+2x-1} \geq 0$ $\rightarrow \frac{x+3}{(x-1)(x^2-x+1)} \geq 0$ $\rightarrow x < -3$ $\rightarrow D_f = \mathbb{R} - (-3, 1]$

(۳) $y = \frac{1}{x^2-5|x-1|-2x+5}$ $\rightarrow x^2-5|x-1|-2x+5=0$ $\rightarrow x^2-5x+5-2x+5=0$ $\rightarrow x^2-7x+10=0$ $\rightarrow (x-2)(x-5)=0$ $\rightarrow x=2$ $\rightarrow D_f = \mathbb{R} - \{2, 5\}$

(۴) الف) $\sqrt{-x}-2 \rightarrow [-x]-2 \geq 0 \rightarrow [-x] \geq 2 \rightarrow -x \geq 2 \rightarrow x \leq -2$
 ب) $y = \frac{5x^2+4}{[x]^2-2[x]-3}$ $\rightarrow [x]^2-2[x]-3=0$ $\rightarrow ([x]-3)([x]+1)=0$ $\rightarrow [x] \neq -1$ $\rightarrow D_f = \mathbb{R} - \{3, 4\} - [-1, 0)$

(۵) الف) $y = \sqrt{[x-\frac{1}{3}]+[x+\frac{2}{3}]} = \sqrt{[x+\frac{2}{3}]+[x+\frac{2}{3}]-1} \rightarrow 2[x+\frac{2}{3}]-1 \geq 0$
 $\rightarrow [x+\frac{2}{3}] \geq \frac{1}{2} \rightarrow x \geq \frac{1}{3} \rightarrow D_f = [\frac{1}{3}, +\infty)$
 ب) $y = \sqrt{[x-\frac{1}{3}]+[\frac{1}{3}-x]} (x-\frac{1}{3})=t \rightarrow [t]+[-t] = 0$ $\rightarrow t \in \mathbb{Z} \rightarrow [t]+[-t]=0$ $\rightarrow t \notin \mathbb{Z} \rightarrow [t]+[-t]=-1$
 $\Rightarrow x - \frac{1}{3} \in \mathbb{Z} \rightarrow x \in \mathbb{Z} + \frac{1}{3} \rightarrow D_f = \{x | x = k + \frac{1}{3}, k \in \mathbb{Z}\}$

(۶) الف) $y = \frac{\cot x + 1}{\tan x + 1}$ $\rightarrow \tan x \neq -1 \Rightarrow \tan x \neq k\pi - \frac{\pi}{4}$ $\Rightarrow D_f = \mathbb{R} - \{k\pi - \frac{\pi}{4}, k\pi\}$
 ب) $y = \sqrt{1-4\sin^2 x} \rightarrow 1-4\sin^2 x \geq 0 \rightarrow \sin x \leq \frac{1}{2} \Rightarrow D_f = [2k\pi - \frac{5\pi}{4}, 2k\pi + \frac{\pi}{4}]$

راه حل تشریحی در صفحه آخر!

$\sin x \geq \frac{1}{2}$



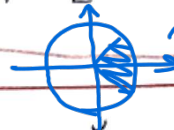
الف) $y = \sqrt{r \sin x - 1} \rightarrow r \sin x - 1 \geq 0 \rightarrow \sin x \geq \frac{1}{r}$ - V

$\Rightarrow Df = \left[2k\pi + \frac{\pi}{r}, 2k\pi + \frac{5\pi}{r} \right]$ (1, 2)

ب) $y = \sqrt{1 - r \cos x} \rightarrow 1 - r \cos x \geq 0 \rightarrow 1 \geq r \cos x$

$\Rightarrow \cos x \leq \frac{1}{r} \rightarrow Df = \left[2k\pi - \frac{\pi}{r}, 2k\pi + \frac{\pi}{r} \right]$

$Df \in \mathbb{R} - \{ \text{جواب د} \} \Rightarrow$ در این ناحیه $\frac{1}{r} \leq \cos x$ نیست



الف) $y = \arcsin(x^r + 1) \rightarrow x^r + 1 \geq -1 \rightarrow x^r + 1 + 1 \geq 0$ - 1

$Df = [-3, -2] \cup [-1, 0]$

$\Leftrightarrow \begin{cases} x^r + 1 \leq 1 \\ x^r + 1 \leq 0 \end{cases} \Rightarrow x^r + 1 \leq 0 \Rightarrow x^r \leq -1$

ب) $\cos y = \sqrt{5 - 2x} \rightarrow \sqrt{5 - 2x} \leq 1 \rightarrow 5 - 2x \leq 1 \rightarrow 2x \geq 4 \rightarrow x \geq 2$
 $[0, +\infty) \quad 5 - 2x \geq 0 \rightarrow x \leq \frac{5}{2} \rightarrow Df = \left[2, \frac{5}{2} \right]$

الف) $y = \log_r(1 - \log_r^x) \rightarrow x > 0, 1 - \log_r^x > 0 \rightarrow \log_r^x < 1 \Rightarrow x < r$ - 9

$\Rightarrow Df = (0, r)$

ب) $y = \log_r(1 - \log_{\frac{1}{r}}^x) \rightarrow x > 0, 1 - \log_{\frac{1}{r}}^x > 0 \rightarrow \log_{\frac{1}{r}}^x < 1$

$\Rightarrow Df = \left(\frac{1}{r}, +\infty \right) \Rightarrow x > \frac{1}{r}$

الف) $y = \sqrt{r^{rx-x^r} - 1} \rightarrow r^{rx-x^r} - 1 > 0 \rightarrow r^{rx-x^r} > 1$ - 10

$\Rightarrow r^{rx-x^r} > r^0 \rightarrow rx - x^r < 0 \rightarrow (x-1)(x-r) < 0$

$\Rightarrow Df = [1, r]$

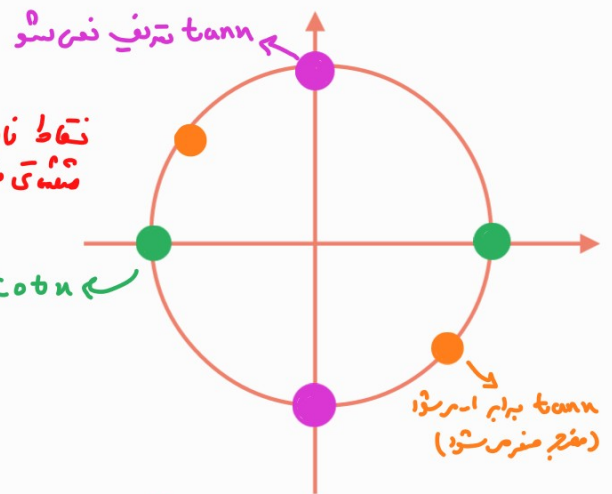
ب) $y = \left(\frac{rx + 5}{rx + r} \right)! \rightarrow \frac{rx + 5}{rx + r} \in \mathbb{W} \rightarrow x = -\frac{rw - 5}{rw - r}$

$\Rightarrow Df = \left\{ x \mid x = \frac{5 - rk}{rk - r}, k \in \mathbb{W} \right\}$

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

→ نقاط نامطلوب را در دایره
مستطقی مشخص میکنیم.

$\cot x$ تعریف نمیشود



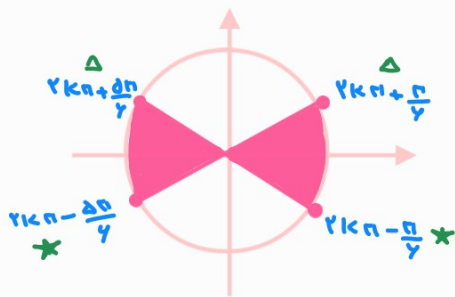
$x \neq k\pi + \frac{\pi}{2}$

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

$\hookrightarrow x \neq \frac{k\pi}{4}$

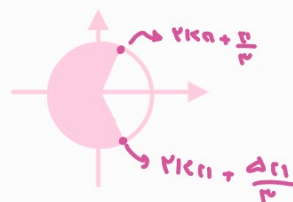
$\rightarrow D_f = \mathbb{R} - \left\{ \frac{k\pi}{4}, k\pi + \frac{\pi}{2} \right\}$

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



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

۴- ج) $1 - 4\cos x \geq 0 \rightarrow \cos x \leq \frac{1}{4}$



$\rightarrow D_f = \left[r(k\pi + \frac{\pi}{4}), r(k\pi + \frac{7\pi}{4}) \right]$