

$$2x^3 + 3x^2 - 11x + 3 \mid x-1$$

(۱)

الف) $y = \frac{x+3}{2x^3 + 3x^2 - 11x + 3}$

$$\begin{array}{r} 2x^3 + 3x^2 - 11x + 3 \\ - 2x^3 + 2x^2 \\ \hline 5x^2 - 11x + 3 \end{array}$$

$$\begin{array}{r} 5x^2 - 11x + 3 \\ - 5x^2 + 5x \\ \hline -6x + 3 \end{array}$$

$$\begin{array}{r} -6x + 3 \\ + 6x - 3 \\ \hline 0 \end{array}$$

$$\begin{array}{r} -6x + 3 \\ + 6x - 3 \\ \hline 0 \end{array}$$

$$\begin{array}{r} -6x + 3 \\ + 6x - 3 \\ \hline 0 \end{array}$$

مجموع ضرایب
صفر می شود.

$$\frac{x+3}{2x^3 + 3x^2 - 11x + 3} = \frac{x+3}{(x-1)(2x^2 + 5x - 3)} \Rightarrow \frac{x+3}{(x-1)(x-1)(x+3)}$$

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

ب) $y = \frac{x+3}{2x^3 + 9x^2 + 10x + 3}$

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

مجموع ضرایب
صفر می شود.

زوج و فرد برابرند

$$2x^3 + 9x^2 + 10x + 3 \mid x+1$$

$$\begin{array}{r} 2x^3 + 9x^2 + 10x + 3 \\ - 2x^3 - 2x^2 \\ \hline 11x^2 + 10x + 3 \end{array}$$

$$\begin{array}{r} 11x^2 + 10x + 3 \\ - 11x^2 - 11x \\ \hline 21x + 3 \end{array}$$

$$\begin{array}{r} 21x + 3 \\ - 21x - 21 \\ \hline 24 \end{array}$$

$$\begin{array}{r} 21x + 3 \\ - 21x - 21 \\ \hline 24 \end{array}$$

$$\begin{array}{r} 21x + 3 \\ - 21x - 21 \\ \hline 24 \end{array}$$

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

$$\Rightarrow \mathbb{R} - \{1\}$$

(۲)

مجموع ضرایب
صفر می شود.

① سطر اول

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

$$\begin{array}{r} -x^2 + 2x - 1 \\ + x^2 - x \\ \hline -x - 1 \end{array}$$

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زنگنه اسادات حسینی
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$$y = \int \frac{x+3}{x^3 - 2x^2 + 2x - 1} dx \Rightarrow \int \frac{x+3}{(x-1)(x^2 - x + 1)} dx \Rightarrow \frac{-\frac{1}{2}}{x-1} + \frac{1}{x^2 - x + 1} \Rightarrow \int_{-\infty}^{\infty} \frac{1}{x^2 - x + 1} dx$$

① (استفاده از جدول)

مجموع تمام ضرایب

مخرج شود

$$\begin{array}{r} x^3 - 2x^2 + 2x - 1 \quad | \quad x - 1 \\ \underline{-x^3 + x^2} \\ x^2 - 2x - 1 \\ \underline{-x^2 + x} \\ -x - 1 \\ \underline{-x - 1} \\ 0 \end{array}$$

از استاندارد هست

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$$f = \frac{x^2 - \omega(x-1) - 2x + \omega}{x^2} \Rightarrow \text{ضابطه بندش من لیم}$$

$$x^2 - \omega + \omega x - 2x + \omega = 0$$

$$x^2 - \omega x + \omega - 2x + \omega = 0$$

$$x^2 + 13x = 0$$

$$x^2 - 17x + 1 = 0$$

$$\boxed{x=0} \quad \boxed{x=-13}$$

$$(x-1)(x-\omega) = 0$$

$$\boxed{x=2} \quad \boxed{x=6}$$

این حالت دیگر هم وجود دارد اگر $x=1$ در این حالت هم مخرج صفر نمی شود پس مشکل ندارد.

$$\boxed{x=1} \Rightarrow 1 - 2 + \omega = 4$$

و اما دامنه تابع که باید به کمک ریشه های مخرج مشخص شود.

$$D_f = \mathbb{R} - \{0, -13, 2, \omega\}$$

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Senobar

$$x-1$$

نوعی ساده است

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$$y = \sqrt{[-x] - 2} \Rightarrow [-x] \geq 2 \Rightarrow -x \geq 2 \Rightarrow x \leq -2$$

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$$y = \frac{ax^2 + 4}{[x]^2 - 2[x] - 3} \Rightarrow [x]^2 - 2[x] - 3 = 0 \Rightarrow [x] = -1 \Rightarrow x = [-1, 0)$$

$$[x] = -\frac{c}{a} = 3 \Rightarrow x = [3, 4)$$

$$D_f = \mathbb{R} - \{[-1, 0) \cup [3, 4)\}$$

1

الف) $y = \sqrt{\left[x - \frac{1}{3}\right] + \left[x + \frac{1}{3}\right]} - 1$

$\sqrt{2\left[x + \frac{1}{3}\right]} - 1 \Rightarrow 2\left[x + \frac{1}{3}\right] - 1 \geq 0 \Rightarrow \left[x + \frac{1}{3}\right] \geq \frac{1}{2} \Rightarrow x + \frac{1}{3} \geq \frac{1}{2}$

$\Rightarrow x \geq \frac{1}{6} \Rightarrow D_f = \left[\frac{1}{6}, +\infty\right)$

ب) $y = \sqrt{\left[x - \frac{1}{3}\right] + \left[\frac{1}{3} - x\right]} \Rightarrow \begin{cases} \text{if } x \in \mathbb{Z} & [x] + [-x] = 0 \quad \checkmark \\ \text{if } x \notin \mathbb{Z} & [x] + [-x] = -1 \quad \text{ممنوع} \end{cases}$

$\Rightarrow x - \frac{1}{3} \in \mathbb{Z} \Rightarrow x \in \mathbb{Z} + \frac{1}{3} \Rightarrow D_f = \left\{x \mid x = k + \frac{1}{3}, k \in \mathbb{Z}\right\}$

2

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

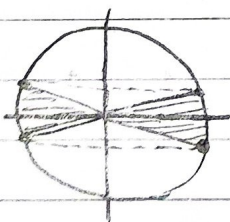
(I) $\Rightarrow \cot = \frac{\cos}{\sin} \Rightarrow \sin \neq 0$ 

(II) $\Rightarrow \tan = \frac{\sin}{\cos} \Rightarrow \cos \neq 0$ 

(III) $\Rightarrow \tan x + 1 \neq 0 \Rightarrow \tan \neq -1$ 

$D_f = (I) \cup (II) \cup (III) \Rightarrow \mathbb{R} - \left\{k\pi, k\pi + \frac{\pi}{4}, k\pi - \frac{\pi}{4}\right\}$

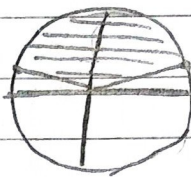
ب) $y = \sqrt{1 - 4\sin^2 x} \Rightarrow 1 - 4\sin^2 x \geq 0 \Rightarrow 1 \geq 4\sin^2 x \Rightarrow \sin^2 x \leq \frac{1}{4} \Rightarrow -\frac{1}{2} \leq \sin x \leq \frac{1}{2}$



$D_f = \left[k\pi - \frac{\pi}{4}, k\pi + \frac{\pi}{4} \right]$



الف) $y = \sqrt{2 \sin x - 1} \Rightarrow 2 \sin x \geq 1 \Rightarrow \sin x \geq \frac{1}{2}$



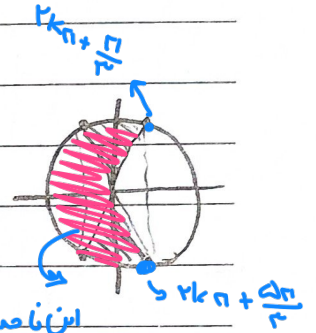
$D_f = [2k\pi + \frac{\pi}{6}, 2k\pi + \frac{5\pi}{6}]$

1/5

ب) $y = \sqrt{1 - 2 \cos x} \Rightarrow 1 - 2 \cos x \geq 0 \Rightarrow 2 \cos x \leq 1 \Rightarrow \cos x \leq \frac{1}{2}$

پایین صفحه را هم در نظر بگیرید!

$D_f = [k\pi + \frac{2\pi}{3}, k\pi + \frac{4\pi}{3}]$



این ناحیه ها را هم در نظر بگیرید

1

الف) $y = \arcsin(x^2 + 2x + 1) \Rightarrow -1 \leq \sin x \leq 1 \Rightarrow -1 \leq x^2 + 2x + 1 \leq 1$

$x^2 + 2x + 1 \leq 1 \Rightarrow x^2 + 2x \leq 0 \Rightarrow x(x+2) \leq 0 \Rightarrow x \in [-2, 0]$

$x^2 + 2x + 1 \geq -1 \Rightarrow x^2 + 2x + 2 \geq 0 \Rightarrow x \in (-\infty, -2] \cup [-1, +\infty)$

$\Rightarrow D_f = [-2, -1] \cup [0, 2]$

2

ب) $y = \sqrt{5 - 2x} \Rightarrow -1 \leq \sqrt{5 - 2x} \leq 1 \Rightarrow 0 \leq 5 - 2x \leq 1$

$0 \leq 5 - 2x \leq 1 \Rightarrow -5 \leq -2x \leq -4 \Rightarrow 2 \leq x \leq 5$

$D_f = [2, 5]$

4

الف) $y = \log_r(1 - \log_r x) \Rightarrow 1 - \log_r x \geq 0 \Rightarrow \log_r x \leq 1 \Rightarrow x \leq r$

$x > 0 \Rightarrow D_f = (0, r)$

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تعدادی است

$$b) \log_2 \left(1 - \log_2 \frac{x}{\frac{1}{2}} \right) \Rightarrow \begin{cases} x \leq 0 \\ 1 - \log_2 \frac{x}{\frac{1}{2}} > 0 \Rightarrow \log_2 \frac{x}{\frac{1}{2}} < 1 \Rightarrow x < \frac{1}{2} \end{cases} \quad D_f = \left(\frac{1}{2}, +\infty \right)$$

منجانبین ۰ است پس حبت عوض می شود

$$c) y = \sqrt{2^{4x-x^2}} - 1 \Rightarrow 2^{4x-x^2} \geq 2^2 \Rightarrow 4x-x^2 \geq 2 \Rightarrow x^2-4x+2 \leq 0 \Rightarrow$$

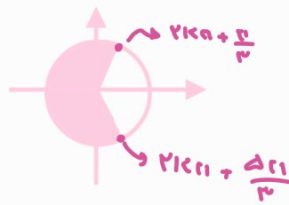
$$\boxed{x \geq 1} \quad \boxed{x \leq \frac{2}{a} \geq 2}$$

$$\Rightarrow [1, 2]$$

$$d) y = \left(\frac{2x+5}{2x+2} \right)! \Rightarrow \frac{2x+5}{2x+2} \in \omega \Rightarrow \frac{2x+5}{2x+2} = x \Rightarrow x = \frac{5-2x}{2x-2}$$

$$D_f = \left\{ x \mid x = \frac{2k-5}{2-2k}, k \in \omega \right\}$$

$\text{ب-} \quad 1 - r \cdot \sin \theta > 0 \rightarrow \sin \theta < \frac{1}{r} \rightarrow \text{Def} \left[r k \pi + \frac{\pi}{r}, r k \pi + \frac{2\pi}{r} \right]$



$\text{ا-} \quad y = \log_r \left(1 - \log^{\frac{n}{r}} \frac{1}{r} \right) \rightarrow \log^{\frac{n}{r}} \frac{1}{r} \rightarrow n > 0$

$\hookrightarrow 1 - \log^{\frac{n}{r}} \frac{1}{r} > 0 \rightarrow \log^{\frac{n}{r}} \frac{1}{r} < 1 \xrightarrow{\text{مناسب}} n > \frac{1}{r}$

$\text{Def} \left(\frac{1}{r}, +\infty \right)$