باران میرشاه ولایتی - شماره تکلیف ۳ - گروه یازدهم دختر

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الف) $2x^3+3x^2-8x+3 \xrightarrow{\div x-1} \underline{2x^2+5x-3} \xrightarrow{\text{ریشه}} x^2+5x-6=0$

$(x+6)(x-1)=0 \to -\frac{6}{2}=-3 \ , \ \frac{1}{2} \Rightarrow D_f=\mathbb{R}-\{-3,\frac{1}{2},1\}$

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ب) $2x^3+9x^2+10x+3 \xrightarrow{\div x+1} \underline{2x^2+7x+3} \xrightarrow{\text{ریشه}} x^2+7x+6=0$

$(x+1)(x+6)=0 \to -\frac{1}{2} \ , \ -\frac{6}{2}=-3 \Rightarrow D_f=\mathbb{R}-\{-\frac{1}{2},-3,-1\}$

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الف) $x^3-2x^2+2x-1 \xrightarrow{\div x-1} \underline{x^2-x+1} \xrightarrow{\text{ریشه}} \Delta=1-4=-3 \Rightarrow D_f=\mathbb{R}-\{1\}$

ریشه ندارد

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ب) $\frac{x+3}{(x-1)(x^2-x+1)} \geq 0 \to$

$-\infty$	-3		1	$+\infty$
$+$	0	$-$	$\nexists$	$+$

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

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$x^2-5|x-1|-2x+5 \neq 0 \Rightarrow x^2-2x+5 \neq 5|x-1| \Rightarrow D_f=\mathbb{R}-\{2,5,0,-3\}$

$5(x-1) \neq x^2-2x+5 \to x^2-7x+10 \neq 0 \to x \neq 2,5$

$(x-2)(x-5) \neq 0$

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$5(x-1) \neq -x^2+2x-5 \to x^2+3x \neq 0 \to x \neq 0,-3$

$x(x+3) \neq 0$

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الف)

$|2x+1|-|x+3| \neq 0$

$\to 2x+1 \neq x+3 \to x \neq 2$

$\to 2x+1 \neq -x-3 \to x \neq -\frac{4}{3}$

$\Rightarrow D_f=\mathbb{R}-\{2,-\frac{4}{3}\}$

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ب) $|2x+1|-|x+3| \geq 0$

$|2x+1| \geq |x+3| \xrightarrow{\text{توان ۲}} 4x^2+1+4x \geq x^2+6x+9$

$3x^2-2x-8 \geq 0 \to$

$-\infty$	$-\frac{4}{3}$		2	$+\infty$
$+$	0	$-$	0	$+$

$\Rightarrow D_f=(-\infty,-\frac{4}{3}] \cup [2,+\infty)$

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الف) $1-\log_3 x > 0 \to \log_3 x < 1 \to x<3 \xrightarrow{\cap}$ $\Rightarrow D_f=(0,3)$

و

$x>0$

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ب) $1-\log_{\frac{1}{2}} x > 0 \to \log_{\frac{1}{2}} x < 1 \to x > \frac{1}{2} \xrightarrow{\cap}$ $\Rightarrow D_f=(\frac{1}{2},+\infty)$

و

$x>0$

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$(I) \to 2x-1>0 \to x>\frac{1}{2}$

$(II) \to \log_5^{2x-1} > 0 \to 2x-1>1$, $x>1$

$\log_{0/5}^{\log_5^{2x-1}} \geq 0 \to 2x-1 \leq 5 \to x \leq 3 \; (III)$

$\underset{(I),(II),(III)}{\cap} \Rightarrow D_f = (1, 3]$

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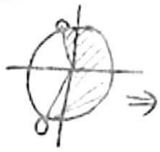
$2\cos x + 1 > 0$

$2\cos x > -1 \to \cos x > -\frac{1}{2} \to$  $\Rightarrow D_f = \left(2k\pi - \frac{2\pi}{3}, 2k\pi + \frac{2\pi}{3}\right)$

ب) $\frac{x-1}{x+1} > 0 \to \begin{array}{c|ccccc} & -\infty & -1 & & 1 & +\infty \\ \hline & + & \oslash & - & 0 & + \end{array} \longrightarrow (-\infty, -1) = D_f$

اشتراک

$\log_{10}^{\frac{x-1}{x+1}} \geq 0 \to \frac{x-1}{x+1} \geq 1 \longrightarrow \frac{x-1}{x+1} - 1 \geq 0 \to \frac{-2}{x+1} \geq 0 \to \begin{array}{c|ccc} & & -1 & \\ \hline & - & \oslash & + \end{array}$

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$f(x) = \sqrt{(a+2)x^2 + ax + b} \longrightarrow D = (-\infty, 3]$

$a = -2 \longrightarrow \sqrt{-2x+b} \quad -2x+b \geq 0 \longrightarrow -2x \geq -b \to x \leq \frac{b}{2} \Rightarrow$

$(-\infty, 3]$ = طبق فرض $\longrightarrow \frac{b}{2} = 3 \to b = 6$

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اگر ریشه مضاعف داشته باشد $\longrightarrow \Delta = 0 \longrightarrow \begin{array}{c|ccc} -\infty & & \text{ریشه}^* & +\infty \\ \hline & + & 0 & + \end{array} \Rightarrow 4 - 4(2 - m^2) = 0$

$m^2 = 1, \; m = \pm 1 \Rightarrow$

$1 - (-1) = 2$

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$4 - x^2 \geq 0 \to (2-x)(2+x) \geq 0 \to \begin{array}{c|ccccc} -\infty & & -2 & & 2 & +\infty \\ \hline & - & 0 & + & 0 & - \end{array}$

$\Rightarrow$ عدد صحیح $= -2, -1, 0, 1, 2$

$\Downarrow$

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$[x] + [-x] + 1 \neq 0 \longrightarrow x \in \mathbb{Z}$

$$\begin{cases} x \in \mathbb{Z} \to \underbrace{[x] + [-x]}_{\text{صفر}} + 1 = 1 \\ x \notin \mathbb{Z} \to \underbrace{[x] + [-x]}_{-1} + 1 = 0 \end{cases}$$