Subject: Date:

یازدهم دخترC — فرانک آقایی — تکلیف شماره ۳

1. الف) $y=\frac{x+3}{2x^3+3x^2-8x+3} \Rightarrow 2x^3+3x^2-8x+3=(x-1)(2x^2+5x-3)$

$-3 \swarrow \searrow \frac{1}{2}$

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

$D_f=\mathbb{R}-\{-3,\frac{1}{2},1\}$

ب) $\frac{x+3}{2x^3+9x^2+10x+3} \Rightarrow 2x^3+9x^2+10x+3=(x+1)(2x^2+7x+3)$

$-3 \swarrow \searrow -\frac{1}{2}$

$D_f=\mathbb{R}-\{-3,-\frac{1}{2},-1\}$

2. الف) $\frac{x+3}{x^3-2x^2+2x-1}=y \rightarrow x^3-2x^2+2x-1=(x-1)(x^2-x+1)$ $\Delta=b^2-4ac=$

$-3 \rightarrow \Delta<0$ یک عبارت همیشه مثبت یا همیشه منفی نداریم

$D_f=\mathbb{R}-\{1\}$

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

	-3		$+1$	
	$+$	ϕ	$-$	$+$

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

4. الف) $|2x+1|-|x+3|\neq 0 \rightarrow$ ① $4x^2+4x+1+x^2+9+6x-2(2x^2+6x+x+3)\neq 0$

$x^2-4x+4\neq 0 \rightarrow (x-2)^2\neq 0 \rightarrow x\neq 2$

② $5x^2+10x+10+4x^2+7x+6+7x\neq 0 \rightarrow 9x^2+24x+16\neq 0 \rightarrow (3x+4)^2\neq 0$

$x\neq -\frac{4}{3}$

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

ب) $|2x+1|-|x+3|\geq 0 \rightarrow$

	$-\frac{4}{3}$		2	
	$+$	ϕ	$-$	$+$

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

5. الف) $1-\log_3^x>0 \rightarrow \log_3^x<1 \rightarrow x<3$ $D_f=(0,3)$

$x>0$

s.a.m

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

3. $x^2-3|x-1|-2x+3\neq 0$ $\boxed{x>1}$ $\longrightarrow x^2-3x+3-2x+3\neq 0 \longrightarrow x^2-5x+6\neq 0$

$\boxed{x=1} \longrightarrow x^2-2x+3\neq 0 \longrightarrow \Delta<0 \longrightarrow$ همیشه مثبت $(x-3)(x-2)\neq 0$ (3 ↙, ↘ 2)

$\boxed{x<1} \longrightarrow x^2+3x-3-2x+3\neq 0 \longrightarrow x^2+x\neq 0$ (0 ↙↘ −1)

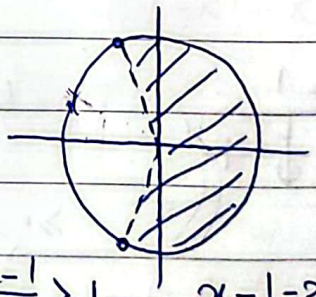
$D_f=\mathbb{R}-\{0,-1,2,3\}$

6. $2x-1>0 \longrightarrow 2x>1 \longrightarrow x>\frac{1}{2}$ $\log_3^{(2x-1)}>0 \longrightarrow 2x-1>1 \longrightarrow 2x>2 \Rightarrow x>1$

$\log_{\frac{1}{3}}^{(2x-1)} \geq 0 \longrightarrow \log_3^{2x-1} \leq 1 \longrightarrow 2x-1\leq 3 \longrightarrow 2x\leq 4 \longrightarrow x\leq 2$

$D_f=(1,2]$

7. الف) $2\cos x+1>0 \longrightarrow 2\cos x>-1 \longrightarrow \cos x>-\frac{1}{2}$



$D_f=(2k\pi-\frac{2\pi}{3},2k\pi+\frac{2\pi}{3})$

ب) $\frac{x-1}{x+1}\geq 0 \longrightarrow$ (−1, +1) $\log \frac{x-1}{x+1}\geq 0 \longrightarrow \frac{x-1}{x+1}\geq 1 \longrightarrow \frac{x-1-x-1}{x+1}\geq 0 \longrightarrow$

$\frac{-2}{x+1}\geq 0 \longrightarrow$ (−1, −)

$D_f=(-\infty,-1)$

8. $(a+2)x^2+ax+b \longrightarrow$

$a=-2 \longrightarrow \boxed{-2x+b} \longrightarrow -2x+b\geq 0 \longrightarrow -2x\geq -b \longrightarrow x\leq \frac{b}{2} \longrightarrow \frac{b}{2}=2 \Rightarrow \boxed{b=4}$

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9. $x^2+2x+2-m^2 \geq 0 \longrightarrow \Delta \leq 0 \longrightarrow b^2-4ac \rightarrow 4-4(2-m^2) \leq 0 \longrightarrow$

هیشه مثبته

$4-8+4m^2 = 4m^2-4 \leq 0 \longrightarrow 4(m^2-1) \leq 0$

$-1 \quad 1$

$+ \; [\; - \;] \; +$

اختلاف $\longrightarrow 1-(-1) = 2$

10. $4-x^2 \geq 0 \longrightarrow \frac{-2 \quad 2}{- \; + \; -}$ $\qquad [x]+[-x]+1 \neq 0 \longrightarrow \underbrace{[x]+[-x]}_{\text{صفر}} \neq -1 \longrightarrow$ ✓

$[x]+[-x] = -1$

$x \notin \mathbb{Z}$ ×

نوع هیشه $\longrightarrow D_f = [-2,2] \longrightarrow \underbrace{-2,-1,0,1,2}_{\text{یه عدد}}$

مثبت است

s.a.m