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[illegible]

$$\frac{2x^2-4x+2}{2(x-1)^2} + \frac{y^2+6y+9}{(y+3)^2} \to 1\Big|_{-3} \Rightarrow K=2+9=11$$ -۱

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$$a^2+4a=3a+2 \Rightarrow a^2+a-2=(a+2)(a-1)=0 \to \boxed{a=1 \text{ ق}},\quad a=-2\ ✗$$ -۲

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$$\Rightarrow f(x)\begin{cases} x^2+4x & x\ge 1\\ 2x+3 & x\le 1\end{cases} \Rightarrow \boxed{f(1)=5} \to \begin{matrix}1+4\\ k\\ 2+3\end{matrix}$$

$$|x+1|\ge 2 \begin{cases} x+1\ge 2 \Rightarrow x\ge 1\\ x+1\le -2 \Rightarrow x\le -3\end{cases} \to 2x^2-b$$ -۳

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$$-3<x\le -1 \Rightarrow a+2x$$

$$x=-3 \Rightarrow 18-b=a-6 \Rightarrow a+b=24$$

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① $\to b-3x\ge 0 \Rightarrow 3x\le b \Rightarrow x\le \frac{b}{3}$ -۴

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$\frac{b}{3}=2 \Rightarrow \boxed{b=6}$

② $\to 6x-a\ge 0 \Rightarrow x\ge \frac{a}{6} \Rightarrow \frac{a}{6}=2 \Rightarrow \boxed{a=12} \Rightarrow \boxed{\frac{b}{a}=\frac{1}{2}}$

الف) $x+1\ge 0 \Rightarrow x\ge -1 \Rightarrow D_f=[-1,+\infty)-\{2\}$ -۵

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الف)

$6-x\ge 0 \Rightarrow x\le 6 \Rightarrow \boxed{D_f=[-1,6]-\{2\}}$

ب) $[x]-4\ge 0 \Rightarrow [x]\ge 4 \Rightarrow x\ge 4$

$2-[x]\ge 0 \Rightarrow [x]\le 2 \Rightarrow x<3 \Rightarrow D_f=\cancel{[4,3)}$ $\varnothing$

الف) $$\frac{(x-3)(x+2)}{(x^2-9)(x^2-4)} = \frac{(x-3)(x+2)}{(x-3)(x+3)(x+2)(x-2)}$$ -۶

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	-3		-2		2		3	
$+$		$-$		$-$		$+$		$+$

$\Rightarrow D_f=(-\infty,-3)\cup(2,3)\cup(3,+\infty)$

ب) صورت → $(x-1)(x^2-x-6)$

$= (x-1)(x-3)(x+2)$

1	-2	-5	6
1	-1	-6	0

$x^2 - x - 6$

مخرج → $(x+1)(x^2+x-6)$

$= (x+1)(x+3)(x-2)$

1	2	-5	-6
1	1	-6	0

$x^2 + x - 6$

1 3 -2

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

-1 -3 2

	-3		-2		-1		1		2		3	
+	|	-	|	+	|	-	|	+	|	-	|	+

$\Rightarrow (-\infty, -3) \cup [-2, -1) \cup [1, 2) \cup [3, +\infty)$

الف) $[-x] - 2 \geq 0 \Rightarrow [-x] \geq 2 \Rightarrow -x \geq 2 \Rightarrow \boxed{x \leq -2}$ ۷-

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ب) $([x]-3)([x]+1) = 0 \Rightarrow [x] = -1 \Rightarrow x \in [-1, 0)$

$[x] = 3 \Rightarrow x \in [3, 4)$

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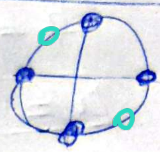
$\Rightarrow D = R - \{[-1, 0) \cup [3, 4)\}$

الف) $\tan\alpha \neq -1$

$\cos\alpha \neq 0$

$\sin\alpha \neq 0$



$\Rightarrow D = R - \{\frac{k\pi}{2} \cup \arctan(-1)\}$ ۸-

$k\pi - \frac{\pi}{4}$

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ب) $1 - 4\sin^2\alpha \geq 0 \Rightarrow 4\sin^2\alpha \leq 1 \Rightarrow \sin^2\alpha \leq \frac{1}{4} \Rightarrow -\frac{1}{2} \leq \sin\alpha \leq \frac{1}{2}$

$\Rightarrow D = [k\pi - \frac{\pi}{6}, k\pi + \frac{\pi}{6}]$

الف) $1 - \log_{\frac{1}{2}}^{x-1} \geq 0 \Rightarrow \log_{\frac{1}{2}}^{x-1} \leq 1 \Rightarrow x - 1 \geq \frac{1}{2} \Rightarrow \boxed{x \geq \frac{3}{2}}$ ۹-

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ب) $x(x-1) \geq 0 \Rightarrow$ 0 1 : + | - | +

$1 - \log_4^{x^2-3x} = 0 \Rightarrow \log_4^{x^2-3x} = 1 \Rightarrow x^2 - 3x - 4 = 0$ → $x \neq 4$, $x \neq -1$

$x^2 - 3x > 0 \Rightarrow x(x-3) > 0$ 0 3 : + | - | +

$\Rightarrow D = (-\infty, 0) \cup (3, +\infty) - \{-1, 4\}$

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الف) $2^{4x-x^2} - 8 \geq 0 \Rightarrow 2^{4x-x^2} \geq 8 \Rightarrow 4x - x^2 \geq 3$

$\Rightarrow x^2 - 4x + 3 \leq 0$

$\Rightarrow (x-1)(x-3) \leq 0$

	1		3	
+		−		+

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

$[1, 3]$

ج) $\dfrac{3x+5}{2x+4} \in W \Rightarrow \dfrac{3x+5}{2x+4} = k \Rightarrow x = \dfrac{-4k+5}{2k-3}$

$\Rightarrow D_f = \left\{ x = \dfrac{-4k+5}{2k-3} \mid k \in W \right\}$