Subject : ( ) طراوت کریمی ۱ دهم، خرد B Date :

سوال ۱ :

$x=a \rightarrow x^2+2x=ax-4$

$a^2+2a=a^2-4 \rightarrow \boxed{a=-2}$ → جواب

سوال ۲ :

$(2,3) \rightarrow g(x^2)=f(x^2)=3$

$g(2)=4+b=3 \rightarrow \boxed{b=-1}$

$f(2)=\frac{4+a}{4+1}=3 \rightarrow 4+a=15 \rightarrow \boxed{a=11}$

$f(1)=\frac{1+11}{2+1}=\frac{12}{3}=\boxed{4}$ → جواب

سوال ۳ :

$f(x)=\frac{4x+1}{2x^2+ax+b} \quad \mathbb{R}-\{-1,4\}$ ← ضابطه

$2-a+b=0 \;/\; 32+4a+b=0 \rightarrow -30=5a \rightarrow \boxed{a=-6} \;/\; \boxed{b=-8}$

$f(4)=\frac{4+1}{2-6-8}=\frac{5}{-12} \rightarrow \boxed{-\frac{5}{12}}$ → جواب

سوال ۴ :

$f(x)=\frac{x^3-\sqrt{3}}{-4x^2+ax+b} \quad \mathbb{R}-\{-1\} \quad a+b=?$

$-4x^2+ax+b \leq 0 \rightarrow \Delta=0 \rightarrow -4a+b=0 \rightarrow b=4a+4$

$a^2-4(-4)(b)=0 \rightarrow a^2+16(a+4)=a^2+16a+64=(a+8)^2=0$

$\boxed{a=-8}$

$\boxed{b=4}$

$a+b=-8-4=\boxed{-12}$ → جواب

سوال ۵ :

$f(x)=\frac{2x}{(x-1)(x^2+mx+1)} \quad D_f=\mathbb{R}-\{1\}$

① $\Delta<0 \rightarrow m^2-4<0$

$(m+2)(m-2)<0$

(-2) (2)

	-2		2	
	+	0	-	0	+

جواب : $\boxed{(-2,2)}$

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سوال ۶:

$f(x)=\sqrt{4-\frac{1}{x^2}} \rightarrow x\neq 0$

$\Rightarrow 4-\frac{1}{x^2}\geq 0 \rightarrow (2+\frac{1}{x})(2-\frac{1}{x})\geq 0$

	$-\infty$		$-\frac{1}{2}$		0		$\frac{1}{2}$		$+\infty$
$2+\frac{1}{x}$		$-$	0	$+$	$\|$	$+$		$+$	
$2-\frac{1}{x}$		$-$		$-$	$\|$	$-$	0	$+$	
		$+$	0	$-$	$\|$	$-$	0	$+$	

$(-\infty,-\frac{1}{2}]\cup[\frac{1}{2},+\infty)$

سوال ۷:

$f(x)=\sqrt{mx^2-2mx+1}$ $mx\geq 0 \rightarrow f(x)\geq 0$

$m=[0,+\infty)$ جواب

سوال ۸:

$f(x)\begin{cases}\frac{4x^2-2}{2x-1} & : x\neq a \rightarrow \boxed{a=\frac{1}{2}}\\ 4x+k & : x=\frac{1}{2}\end{cases}$

$g(x)=2x+1$

$f(\frac{1}{2})=g(\frac{1}{2})$

$2+k=2 \rightarrow \boxed{k=0}$

$a+k=\frac{1}{2}$ جواب

سوال ۹:

$f(x)\begin{cases}\frac{9x^2-4}{3x+2} & : x\neq -\frac{2}{3} \rightarrow \frac{(3x+2)(3x-2)}{3x+2} \xrightarrow{x=\frac{2}{3}} 0\\ 3ax+2 & : x=-\frac{2}{3}\end{cases}$

$g(x)=3x+b$

$g(-\frac{2}{3})=f(-\frac{2}{3})$

$-2+b=-2a+2$

$-2a=2 \rightarrow \boxed{a=-1}$

$g(\frac{2}{3})=f(\frac{2}{3})$

$2+b=0 \rightarrow \boxed{b=-2}$

$a-b=-1+2=\boxed{1}$ جواب

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سوال ۱۵ : $g(x)=x+2$

$$f(x)\begin{cases}\frac{x^2-4}{x-2} & : x\neq 2\\ 2a^2+ax & : x=2\end{cases}$$

$g(2)=4 \rightarrow 2a^2+2a=4 \rightarrow \boxed{a=1}$

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