نام و نام خانوادگی ...... پاسخنامه تشریحی تکلیف شماره ...... کلاس ......

۱

$f(x) = (x+1)^2 + (3x-1)^2 + mx^2 + nx + mn$

$x^2+2x+1 + 9x^2-6x+1 = 10x^2-4x+2 \quad m=-10 \quad n=4$

$\{(4,m), (n,p+1), (p+2,-1), (-9,p+k)\}$

$p+2=-9$

$m+n+p+k = -10+4+(-11)+10 = \boxed{-7}$

$p+1=-10 \Rightarrow p=-11 \qquad -11+k=-1 \Rightarrow k=10$

۲

$y = \sqrt{\dfrac{x-2}{x^4-2x^2-8}}$

$x^4-2x^2-8 \overset{x^2=t}{\Longrightarrow} t^2-2t-8 \Rightarrow (t-4)(t+2)$, $t=4$, $t=-2$ ✗

$t=4 \Rightarrow x=\pm 2$

$- \mid + \mid +$

$D = (-2,+\infty) - \{2\}$

$f(x) = \dfrac{2x^2+1}{4-2[-x]}$

$4-2[-x] \neq 0$

$4 > -2[-x]$

$D_f = \mathbb{R} - [-2,-1)$

۳

$f(x) = \dfrac{\sqrt{x(x^2-1)}}{\sqrt{x+|x|}}$

$\sqrt{x(x^2-1)} \xrightarrow{\pm 1, 0} \quad - \mid + \mid - \mid + \Rightarrow [1,+\infty) \cup [-1,0]$ ①

$\sqrt{x+|x|} \Rightarrow \mathbb{R} - (-\infty,0]$ ②

$① \cap ② = [1,+\infty)$

$f(x) = \dfrac{\sqrt{|x-2|-x^2}}{|x|-1}$

$|x|-1 \rightarrow \mathbb{R} - \{\pm 1\}$ ①

$-x^2+|x-2| \geq 0 \Rightarrow |x-2| \geq x^2$

$x-2 \geq x^2 \Rightarrow 0 \geq x^2-x+2 \Rightarrow \Delta=-7 \rightarrow$

$-x+2 \geq x^2 \Rightarrow 0 \geq x^2+x-2 \Rightarrow (x-1)(x+2)$

$[-2,1]$ ② $\quad ① \cap ② \Rightarrow [-2,1) - \{-1\}$

۴

$y = \dfrac{1}{||x-2|-1|-k}$

$||x-2|-1| = k \qquad x-2 = k+1$

$||x-2|-1| = -k \qquad x-2 = -k-1$

$x-2 = 1-k$

$x-2 = k-1$

$x = k+3$

$x = -k+1$

$x = -k+3$

$x = k+1$

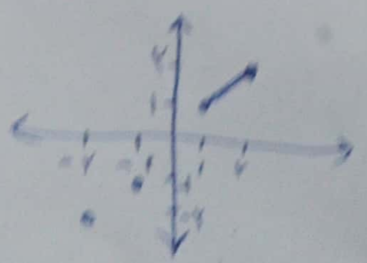
$k+3 = -k+1 \Rightarrow k=-1$ ✗

$3-k = k+1 \Rightarrow k=1$

$k+3 = 3-k \Rightarrow k=0$

۵

$[-2,2] \qquad y = 2x - [x]$



فرید غازی

$f(x)=\frac{x^2-4x+3}{x+a}+b$ تابع همانی

$\frac{(x-1)(x-3)}{(x-1)}+b \Rightarrow (x-3)+3=x \longrightarrow$ تابع همانی

$b=+3 \quad a=-1 \qquad a-b=-1(-3)=-4 \qquad -4+(-4)=\boxed{-8}$ ۶

$\frac{(x-1)(x-3)}{(x-3)}+b \Rightarrow x-1+1=x \rightarrow$ تابع همانی $\quad a=-3, b=1 \Rightarrow a-b=-3-1=-4$

$f(x)=\begin{cases}\frac{x^3+2x^2-x-2}{x^2-1} ; & x\neq \pm 1\\ \frac{ax+2}{x+b} ; & x=\pm 1\end{cases}$

$\frac{8-32-4}{3}=\frac{8-36}{3}=\frac{-28}{3}$

$\frac{-222}{8}=-27.75$

$\begin{cases}4+3c=-28\\ 0.3+c=-27.75\end{cases} \Rightarrow 3+2c=0.25$

$2c=0.25-3 \Rightarrow c=-1.375$

$\frac{-a+2}{-1+b}=-2.375 \rightarrow 2.375-2.375b=-a+2$ ۷

$\frac{a+2}{1+b}=-0.375 \rightarrow -0.375-0.375b=a+2$

$2-2.75b=4 \Rightarrow -2.75b=2$

$a+b=0.72+(-1.375)=0.475 \quad b=0.72$

$b-4x\geq 0 \Rightarrow b\geq 4x \Rightarrow \frac{b}{4}\geq x \qquad 3a-\frac{b}{2}-k=f(\frac{4}{3})$

$4x-3a\geq 0 \Rightarrow 4x\geq 3a \Rightarrow x\geq \frac{3}{4}a \qquad 4-2+\frac{1}{2}=2+\frac{1}{2}=\boxed{\frac{5}{2}}$ ۸

$\frac{b}{4}=1 \Rightarrow b=4 \qquad \sqrt{4x-3\times\frac{4}{3}}+k-1=\sqrt{4x-4}+k-1=k-1$

$\frac{3}{4}a=1 \Rightarrow \frac{4}{3}=a \qquad \sqrt{4-4x}+3k=\sqrt{4-4}+3k=3k$

$3k=k-1$

$2k=-1 \Rightarrow k=-\frac{1}{2}$

$g(x)=\sqrt{2x+2} \qquad D_{fog}=[-1,7] \qquad \sqrt{2(3)+2}=\sqrt{8}=2\sqrt{2}$

$2x+2\geq 0 \Rightarrow 2x\geq -2 \qquad 2f-g(3)=6\sqrt{2} \Rightarrow 2f=8\sqrt{2} \Rightarrow f=4\sqrt{2}$

$x\geq -1 \qquad 2\sqrt{2} \qquad \sqrt{4}=2$

$\sqrt{m-x}+n \qquad f(3)=4\sqrt{2} \Rightarrow \sqrt{7-3}+n \Rightarrow 4\sqrt{2}=2+n$ ۹

$m-x\geq 0 \Rightarrow m\geq x \qquad n=4\sqrt{2}-2$

$m=7 \Rightarrow 7\geq x \qquad m+n=7+(4\sqrt{2}-2)=\boxed{5+4\sqrt{2}}$

$y=(-1)^4(x-[x])=\frac{1}{2} \Rightarrow y=(x-[x])=\frac{1}{2}$

$(x-[x])=\frac{1}{2}$

- $1.5-[1.5]=0.5$
- $0.5-[0.5]=0.5$
- $-0.5-[-0.5]=0.5$
- $-1.5-[-1.5]=0.5$

۴ جواب دارد ۱۰