۱۹/۷۵

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پارسا طالبی — سلام پیر A — تکلیف ۲

۱- $f(x) \xrightarrow{\text{ثابت}} f(x) = x^2+1+3x+9x^2+1-4x^2+mx^2+nx+mn \Rightarrow 10x^2-4x+2+mx^2+nx+mn$

$\Rightarrow m=-10 \,,\, n=4 \Rightarrow f(x) = 48$

$g(x) \longrightarrow m+n+k+p$

$\Rightarrow m=-10 \Rightarrow p+1=-10 \Rightarrow p=-11$

$p+k=-1 \Rightarrow k=10 \Rightarrow -10+4-11+10=-7$

۲- الف) $\dfrac{x-2}{x^4+2x^2-8} \geq 0 \Rightarrow \dfrac{x-2}{(x^2-4)(x^2+2)} \geq 0$

$\begin{array}{ccccc} & -2 & & 2 & \\ - & \nexists & + & \nexists & + \end{array} \Rightarrow D = (-2, +\infty) - \{2\}$

ب) $\dfrac{2x^2+1}{4-2[-x]} \Rightarrow 4-2[-x] \neq 0$

$\Rightarrow 4 \neq 2[-x] \Rightarrow 2 \neq [-x] \Rightarrow D = \mathbb{R} - (-3, -2]$

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الف) $f(x)=\dfrac{\sqrt{x(x^2-1)}}{\sqrt{|x|+x}}$ $\quad x(x^2-1)\geq 0$

$$\begin{array}{ccccccc} & -1 & & 0 & & 1 & \\ - & & + & & - & & + \end{array} \quad ①$$

② $|x|+x>0$

$\Rightarrow x>0 \xRightarrow{①,②} D_f=[1,+\infty)$

ب) $f(x)=\dfrac{\sqrt{|x-2|-x^2}}{|x|-1} \longrightarrow |x|\neq 1 \Rightarrow x\neq \pm 1$ ①

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

$x^2-x+2 \rightarrow$ مثبت

$x^2+x-2 \rightarrow (x+2)(x-1)$ $\quad -2 \quad 1$

$$\begin{array}{ccccc} & -2 & & 1 & \\ + & & - & & + \end{array}$$

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

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

$\Rightarrow |x-2|-1=k \Rightarrow |x-2|=k+1$ $\quad x-2=k+1$ $\quad x-2=-k-1$

$\Rightarrow x=k+3$ یا $x=1-k$

$2|x-2|-1=-x \Rightarrow |x-2|=1-x \Rightarrow x-2=1-x$ ✓

$x-2=k-1 \Rightarrow x=k+1$ یا $x=3-k$

$\Rightarrow k=x-3$ یا $1-x$ یا $3-x$ یا $k=x-1$

$\Rightarrow 3-k=k+1 \Rightarrow \boxed{k=1}$ $K=1$

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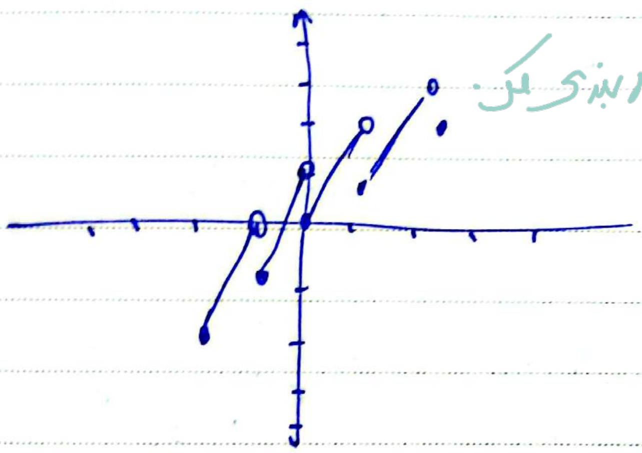

لطفا کامل‌تر بنویس و بازه‌بندی کن ۱,۱۵ ۵-

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$\dfrac{x^2-4x+3}{x+a}+b=x \Rightarrow \dfrac{(x-1)(x-3)}{x+a}+b=x$ ۶-

$\Rightarrow \text{if } a=-1 \Rightarrow x-3+b=x \Rightarrow b=3$ ۲

$\Rightarrow a-b=-4$

$\text{if } a=-3 \Rightarrow x-1+b=x \Rightarrow b=1 \Rightarrow a-b=-4$

$\Rightarrow -4+(-4)=-8$ ← جمع مقادیر ممکن $a-b$

$$f(x)\begin{cases}\dfrac{x^3+3x^2-x-3}{x^2-1} & x\neq \pm 1\\[2ex] \dfrac{ax+2}{x+b}\end{cases} \Rightarrow \frac{(x^2+4x+3)(x-1)}{(x-1)(x+1)}$$

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

$$\text{if } x=1 \Rightarrow \frac{a+2}{1+b}=4 \Rightarrow a+2=4+4b \Rightarrow$$

$$\text{if } x=-1 \Rightarrow \frac{-a+2}{-1+b}=1 \Rightarrow -a+2=-1+b \Rightarrow a=3-b$$

$$\Rightarrow 4b=3-b \Rightarrow b=\frac{1}{4} \qquad \cancel{a}+\frac{1}{2}=\cancel{a}$$

$$f(x)=\sqrt{4x-3a} \qquad g(x)=\sqrt{b-4x} \qquad 3-a$$

$$D_f=4x-3a\geq 0 \Rightarrow 4x\geq 3a \Rightarrow x\geq \frac{3}{4}a$$

$$D_g=b-4x\geq 0 \Rightarrow b\geq 4x \Rightarrow x\leq \frac{b}{4}$$

$$\frac{b}{4} = 1 , \quad \frac{3a}{4} = 1 \Rightarrow a = \frac{4}{3} , \quad b = 4$$

$$2x - 2 - 3x = x \Rightarrow x = -1 \Rightarrow 3 \times \frac{4}{3} - \frac{4}{2} + 1$$

$$= 3$$

-4 (2)

$$g(x) = \sqrt{2x+2} \quad , \quad f(x) = \sqrt{m-x} + n$$

$$D_{f+g} = [-1, 7] \Rightarrow D_f \cap D_g = [-1, 7] \Rightarrow$$

$$2x + 2 \geq 0 \Rightarrow x \geq -1 \qquad m - x \geq 0 \Rightarrow m \geq x$$

$$\Rightarrow m = 7$$

$$(f-g)(3) = 6\sqrt{2} \Rightarrow 2 + n - 2\sqrt{2} = 6\sqrt{2} \Rightarrow n = 8\sqrt{2} - 2$$

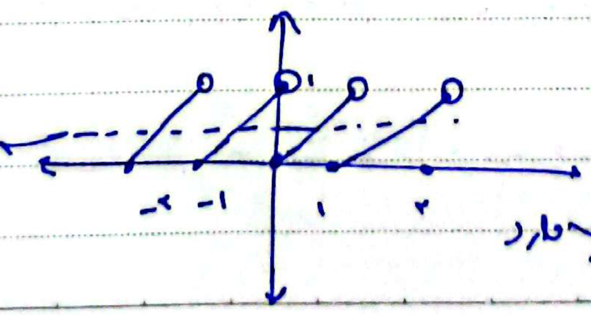
$$\Rightarrow m + n = 7 + 8\sqrt{2} - 2 = 5 + 8\sqrt{2}$$

-5 (2)

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

نمودار $x - [x]$ ←

خط $y = \frac{1}{2}$ ←




هم برخورد بی‌شمار جواب دارد