

بیا خداوند جان آفرین

تکلیف شش

صالح صالح - یازدهم سپهر

$$f(x) = \text{عدد ثابت} \rightarrow f(x) = (m+1)x^2 + (n-4)x + 2 + mn \begin{cases} m+1=0 \rightarrow m=-1 \\ n-4=0 \rightarrow n=4 \end{cases} \quad (1)$$

$$\rightarrow f(x) = -31$$

$$g(x) = \{(4, -1), (4, p+1), (\underbrace{p+2}_{-9}, -1), (-9, p+k)\} \xrightarrow{\text{بوی}} \begin{cases} p+1 = -1 \rightarrow p = -2 \\ p+k = k-1 = -1 \rightarrow k = 0 \end{cases}$$

$$m+n+p+k = -1$$

$$\text{الف)} \frac{x-2}{x^4-2x^2-1} \xrightarrow{x^2=t} \frac{x-2}{t^2-2t-1} \xrightarrow{t=x^2} \frac{x-2}{(t-4)(t+1)} \quad (2)$$

$$\frac{x-2}{(x^2-4)(x^2+1)} \xrightarrow{\text{تجزیه}} \frac{x-2}{(x-2)(x+2)(x^2+1)} \xrightarrow{\text{تجزیه}} \frac{-2}{\infty} \rightarrow D_f = (-2, +\infty)$$

$$\rightarrow \frac{2x^2+1}{4-2[-n]} \rightarrow D_f = \mathbb{R} - \{ \text{مخرج صفر} \} \rightarrow 4-2[-n] \neq 0 \rightarrow 2[-n] \neq 4 \rightarrow$$

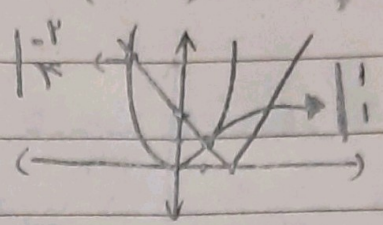
$$[-n] \neq 2 \rightarrow 2 < -n < 4 \rightarrow 4 < n < -2 \rightarrow D_f = \mathbb{R} - (-4, -2)$$

boof

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الف) $x(x^2-1) > 0 \rightarrow \frac{-1}{-1} + \frac{0}{-1} + \frac{1}{-1} \rightarrow x \in [-1, 0) \cup (1, +\infty) (I)$

$|x|+x > 0 \rightarrow \begin{cases} 2x & x > 0 \\ 0 & x \leq 0 \end{cases} \Rightarrow \text{ناشی} \rightarrow x \in (0, +\infty) (II) \rightarrow D_f = (I) \cap (II) = [1, +\infty)$

$|x-2|-x^2 > 0 \rightarrow |x-2| > x^2$  $\rightarrow x \in [-2, 1] (III)$

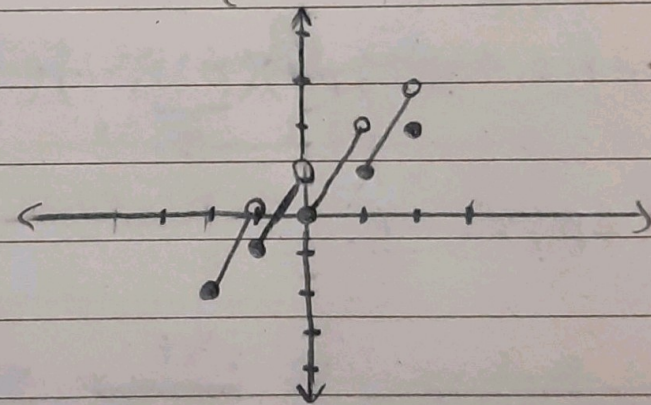
$|x|+1 \neq 0 \rightarrow |x| \neq -1 \rightarrow x \neq \pm 1 (IV) \rightarrow D_f = (I) \cap (II) = [-2, 1] - \{-1\}$

$D_f = R - \{\text{بسته فخرج}\}$

$||x-2|-1|-k = 0 \rightarrow ||x-2|-1| = k \rightarrow \begin{cases} |x-2|-1 = k \rightarrow |x-2| = k+1 \\ |x-2|-1 = -k \rightarrow |x-2| = 1-k \end{cases}$ ۴

$\rightarrow \begin{cases} x-2 = k+1 \rightarrow x = k+3 \\ x-2 = -k-1 \rightarrow x = 1-k \\ x-2 = 1-k \rightarrow x = 3-k \\ x-2 = k-1 \rightarrow x = k+1 \end{cases} \Rightarrow \begin{cases} k+3 = 3-k \rightarrow k=0 \\ k+1 = 1-k \rightarrow k=0 \\ k+3 = 1-k \rightarrow k=-1 \Rightarrow k \in R - \{0, -1\} \\ 3-k = k+1 \rightarrow k=1 \end{cases}$ ۵

$f(n) = \begin{cases} 2n+2 & -2 \leq n < -1 \\ 2n+1 & -1 \leq n < 0 \\ 2n & 0 \leq n < 1 \\ 2n-1 & 1 \leq n < 2 \\ 2n-2 & n=2 \end{cases}$



$f(n) = \frac{(n-3)(n-1)}{n^2+a} + b = n \Rightarrow \begin{cases} a=-3 \rightarrow f(n) = n-1+b \rightarrow b=1 \rightarrow a-b=-4 \\ a=-1 \rightarrow f(n) = n-3+b \rightarrow b=3 \rightarrow a-b=-4 \end{cases} \rightarrow a-b = -4$ ۶

$f(n) = \begin{cases} \frac{2n^3+2n^2-n-2}{n^2-1} \rightarrow \frac{2n^2(n+2)-(n+2)}{n^2-1} = \frac{(n^2-1)(n+2)}{n^2-1} \rightarrow g(n) = n+2 \\ f(1) = 3 \rightarrow \frac{a+2}{1+b} = 3 \rightarrow 3+3b = a+2 \rightarrow b = \frac{a-1}{3} \\ \frac{2-a}{b-1} = 1 \rightarrow 2-a = b-1 \rightarrow b = 3-a \end{cases} \rightarrow \begin{cases} g(1) = 3 \\ g(-1) = 1 \end{cases}$ ۷

مسئله ۱۰

$$\rightarrow \frac{a-1}{3} = 3-a \rightarrow a-1=9-3a \rightarrow 4a=10 \rightarrow a=\frac{5}{2}, b=\frac{1}{2}, c=2$$

$$b+c = \underline{\underline{\frac{5}{2}}}$$

۱) جواب تابع f و g شامل نقاط یک زوج مرتب است و پس نقاط آنها عدد مشترک دارند یا است.

$$D_g = (-\infty, 1] \Rightarrow b-2=0 \rightarrow b=2$$

$$D_f = (1, \infty) \Rightarrow 3-2a=0 \rightarrow a=\frac{3}{2} \Rightarrow 2f-g(1) = 2(1) + 1(2) - 2 - 0 - 3k = k \rightarrow$$

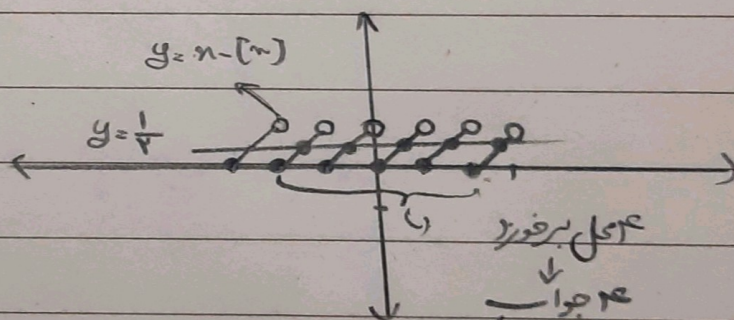
$$-k-2=k \rightarrow k=-1$$

$$3a - \frac{b}{2} - k = 3 - \frac{2}{2} + 1 = \underline{\underline{2}}$$

$$D_{f \times g} = D_f \cap D_g \quad \begin{cases} D_g \Rightarrow 2x+2 \geq 0 \rightarrow x \geq -1 \rightarrow D_g = [-1, +\infty) \\ D_f \Rightarrow m-x \geq 0 \rightarrow m \geq x \rightarrow D_f = (-\infty, m] \end{cases} \Rightarrow D_g \cap D_f = [-1, m] \quad \downarrow m=V$$

$$\underbrace{f-g(x)}_{2\sqrt{x}} = \sqrt{x} \rightarrow f(x) = \sqrt{x} + \sqrt{x} = 2\sqrt{x} = \sqrt{x-3} + n \rightarrow n = \sqrt{x-3} - 2, m+n = 2 + \sqrt{x-3}$$

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



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