ثابت ← $f(x) = (x+1)^2 + (2x-1)^2 + mx^2 + nx + mn \longrightarrow f(x) = -28$

$g(x) = \{(\varepsilon, m)(n, p+1)(p+2, -1)(-9, p+k)\}$

$x^2+2x+1+9x^2-6x+1+mx^2+nx+mn = (10+m)x^2 + (-4+n)x + 2+mn$

$mn = -\varepsilon$

$m = -10$ ✓ $\quad n = \varepsilon$ ✓

$g(x) = \{(\varepsilon, -10)(\varepsilon, p+1)(p+2, -1)(-9, p+k)\}$

$-10 = p+1 \rightarrow p = -11$ ✓

$-11+k = -1 \rightarrow k = 10$ ✓

$m+n+p+k = -7$ ✓

الف) $y = \sqrt{\frac{x-2}{x^4-2x^2-8}}$

$x^2 = t$

$\frac{t-2}{t^2-2t-8} \geq 0$

$\frac{t-2}{(t+2)(t-4)}$

$t = 4 \quad$ غیق $\quad t-2=0 \rightarrow t=2$

$x^2 = 4 \quad x^2 \neq -2$

$x = \pm 2$

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

$D = (-2, +\infty) - \{2\}$ ✓ فرج و نابرابری ✓

ب) $f(x) = \frac{2x^2+1}{\sqrt{4-2[-x]}}$ ✓

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

$[-x] \neq 2$

$2 \leq -x < 3$

$-3 < x \leq -2$

$D_f = \mathbb{R} - (-3, -2]$ ✓ فرج و نابرابری ✓

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

① $x(x^2-1) \geq 0$

$x(x-1)(x+1)$

	-1		0		1	
	$-$	$+$	0	$-$	0	$+$

$[-1, 0] \cup [1, +\infty)$ ✓

② $|x| > -x \longrightarrow (0, +\infty)$

$D_f = ① \cap ② = [1, +\infty)$ ✓

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

① $|x| \neq 1$

$x \neq \pm 1$

② $|x-2| \geq x^2$

$x-2 \geqslant x^2$

$\varnothing \quad 2+x-x^2 \geqslant 0$

$x^2 - x - 2 \leqslant 0$

$x^2+x-2 \leqslant 0$

$(x+2)(x-1) \leqslant 0$

$[-2, 1]$

	-2		1	
	$+$	$-$	0	$+$

$D_f = ① \cap ② = [-2, 1] - \{\pm 1\}$

فرنا خلجی - دوازدهم ریاضی پاسخ تشریحی تکلیف ۲

۴

$\frac{1}{||x-2|-1|-k}$

شرط صفر نشدن مخرج ⟵ $D = R - \{$ریشه مخرج$\}$

$||x-2|-1| \neq k$

A شرط $k \geq 0$

$|x-2|-1 \neq k \to |x-2| \neq k+1$

$x-2 \neq k+1$

$x \neq k+3$

$x-2 \neq -k-1$

$x \neq 1-k$

$|x-2|-1 \neq -k$

$|x-2| \neq -k+1$ در این حالت باید یکی از مقدارها برابر صفر

$x \neq -k+3 \leftarrow x-2 \neq -k+1$

$x \neq k-1 \leftarrow x-2 \neq k-1$

$x-2 = k+1 = 0 \to k = -1 \longrightarrow$ ۲ , ۴ , ۰ ⟵ غ ق ق ⟵ بر خلاف شرط A

$x-2 = -k+1 = 0 \to k = 1 \to$ ۳ , ۰ , ۲ $\to k = 1$

۵

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

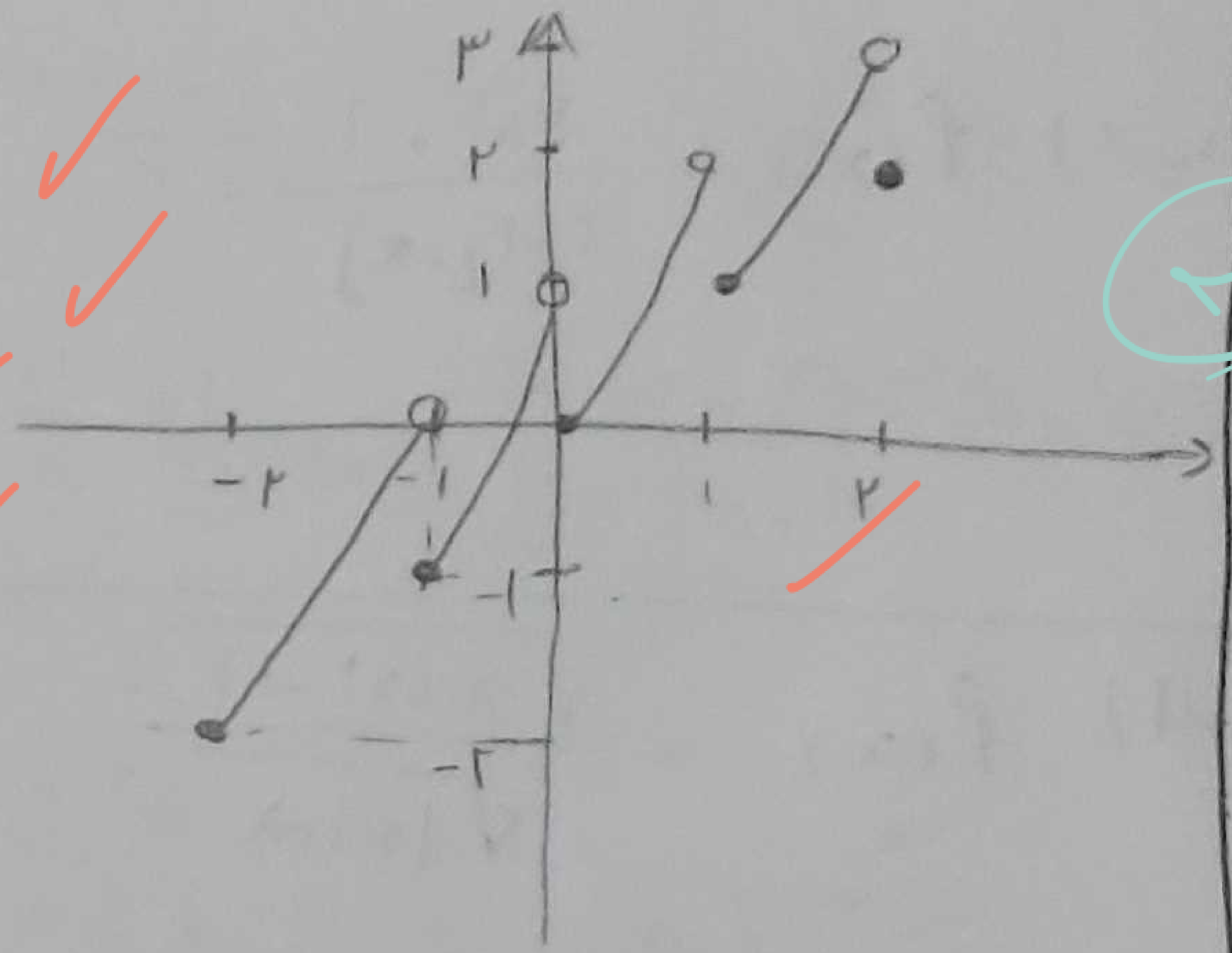
$[-2,-1) \to [x] = -2 \to y = 2x+2$

$[-1,0) \to [x] = -1 \to y = 2x+1$

$[0,1) \to [x] = 0 \to y = 2x$

$[1,2) \to [x] = 1 \to y = 2x-1$

$\{2\} \to [x] = 2 \to y = 2$



۶

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

$\frac{x^2-4x+3+bx+ba}{x+a} = x \longrightarrow x^2 + (b-4)x + ab + 3 = x^2 + ax$

$(b-4)x = ax \to b-4 = a$

$ab = -3$

$\} \to (b-4)b \to b^2 - 4b + 3 = 0$

$(b-1)(b-3) = 0$

۱ ، ۳

if $\xrightarrow{b=1}$ $a = -3$

if $\xrightarrow{b=3}$ $a = -1$

$a - b$ ⟶ $-3-1 = -4$ ، $-1-3 = -4$ $\longrightarrow a - b = -4$

$$f(x)=\begin{cases}\dfrac{x^3+2x^2-x-2}{x^2-1} & ; \ x\neq\pm1\\ \dfrac{ax+2}{x+b} & ; \ x=\pm1\end{cases}$$

$g(x)=x+c$

$b+c=?$

$x^3+2x^2-x-2 \xrightarrow{x=1} 0$

$x^3+2x^2-x-2 \ \big|\ x-1$

$-x^3+x^2$

$3x^2-x-2$

$-3x^2+3x$

$2x-2$

$-2x+2$

0

$x^2+3x+2 \longrightarrow (x+1)(x+2)$

$\dfrac{(x-1)(x+1)(x+2)}{(x+1)(x-1)} = x+c$

$x+2=x+c \longrightarrow c=2$ ✓

$\dfrac{ax+2}{x+b} \xrightarrow{x=1} \dfrac{a+2}{b+1}=2$

$x=-1 \longrightarrow g(x)=1$

$\dfrac{ax+2}{x+b} \xrightarrow{-1} \dfrac{-a+2}{b-1}=1$

$a+2=3b+3$

$a=3b+1$

$\dfrac{2-a}{b-1}=1 \leftarrow 2-a=b-1 \leftarrow a+b=3$

$\begin{cases}a+b=3\\ a-3b=1\end{cases}$

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

$b+c=2+\frac{1}{2}=\frac{5}{2}$ → برآ

$f(x)=\sqrt{4x-3a}+k-1$

$g(x)=\sqrt{b-4x}+3k$

$2f-g\{(1,k)\}$

$3a-\frac{b}{2}-k=?$

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

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

$D_f\cap D_g=\{1\}$

$\frac{3}{4}a=1 \longrightarrow a=\frac{4}{3}$

$\frac{b}{4}=1 \longrightarrow b=4$

$2f-g=2\sqrt{4x-3}-\sqrt{b-4x}+3k-1$

$k=3k-2 \longrightarrow k=1$

$3a-\frac{b}{2}-k=3(\frac{4}{3})-2+1=2$

$f(x) = \sqrt{m-x} + n \qquad g(x) = \sqrt{2x+2} \qquad D_{f\times g} = [-1, 7]$

$f - g(2) = 4\sqrt{2} \qquad m+n = ?$

$D_{f.g} = [-1,7] = D_g \cap D_f \qquad D_g = 2x+2 \geq 0 \rightarrow 2x \geq -2 \rightarrow x \geq -1$

$D_f : (-\infty, 7] \rightarrow m - x \geq 0 \rightarrow m \geq x \rightarrow m = 7$ ✓

$f(2) - g(2) = 4\sqrt{2} \xrightarrow{\text{جایگذاری}} \sqrt{4} + n - 2\sqrt{2} = 4\sqrt{2} \quad n = 8\sqrt{2} - 2$

$m + n = 8\sqrt{2} \qquad 7 + 2 = 8\sqrt{2} + a$

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

$-2 \leq x < -1 \rightarrow x + 2 = \frac{1}{2} \rightarrow x = \frac{3}{2}$ ✓

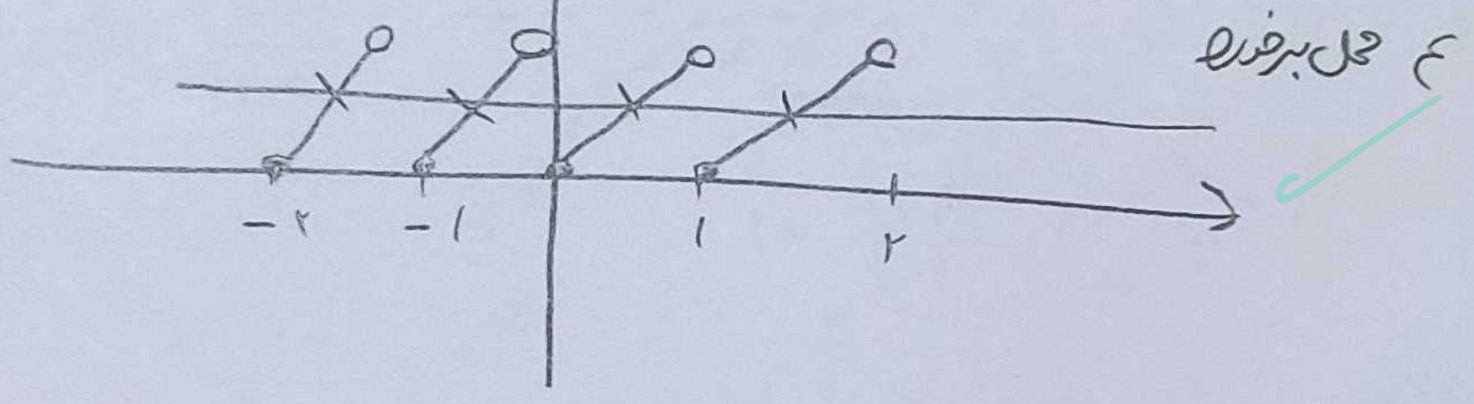
$-1 \leq x < 0 \rightarrow x + 1 = \frac{1}{2} \rightarrow x = \frac{1}{2}$ ✓

$0 \leq x < 1 \rightarrow x = \frac{1}{2}$ ✓

$1 \leq x < 2 \rightarrow x - 1 = \frac{1}{2} \rightarrow x = \frac{3}{2}$ ✓

$x = 2 \rightarrow x - 2 = \frac{1}{2} \rightarrow x = 2.5$ غ ق ق

غ جواب



غ حل برخورد