

$$f(x) = x^2 + 2x + 1 + 9x^2 - 4x + 1 + mx^2 + nx + mn$$

(1)

$$1 \cdot x^2 + mx^2 = 0 \Rightarrow m = -1 \quad -fx + nx = 0 \Rightarrow n = f$$

$$g(x) = \{(f, -1), (f, p+1), (p+1, -1), (-1, p+k)\} \Rightarrow \begin{aligned} p+1 &= 1 \Rightarrow p = -1 \\ p+k &= -1 \Rightarrow k = 1 \end{aligned}$$

$$m+n+p+k = -1 + f + (-1) + 1 = -1$$

الف) $x-2=0 \Rightarrow x=2$ $x^2 - 2x - 1 = 0 \Rightarrow (x^2 - 4)(x^2 + 1) = 0 \Rightarrow \begin{aligned} x^2 - 4 &= 0 \Rightarrow x = \pm 2 \\ x^2 + 1 &= 0 \Rightarrow x = \pm i \end{aligned}$ (2)

$$\frac{-2}{-} \quad \frac{2}{+} \Rightarrow D_f = (-2, +\infty)$$

$\Rightarrow 4-2[-x] \neq 0 \Rightarrow [-x] \neq 2 \Rightarrow 2 \leq -x < 4 \Rightarrow x > -4$
 $\Rightarrow D_f = R - (-2, 4]$

الف) $x(x^2-1) \geq 0$ $\frac{-1}{+} \quad \frac{0}{0} \quad \frac{1}{+}$ $|x| + x > 0 \Rightarrow \begin{aligned} R^- &\Rightarrow 0 \\ 0 &\Rightarrow 0 \\ R^+ &\Rightarrow x \end{aligned}$ (3)
 $\Rightarrow [-1, 0] \cup [1, +\infty)$ $D_f = D \cap P = [1, +\infty)$

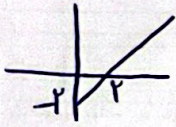
ب) $|x-2| - x^2 > 0$ $\frac{2}{+} \quad \frac{-2}{-}$ $x-2-x^2 \geq 0 \Rightarrow x^2 - x + 2 \leq 0 \Rightarrow \emptyset$
 $x-2-x^2 > 0 \Rightarrow x^2 - x + 2 \leq 0 \Rightarrow (x+1)(x-1) \geq 0$ $\frac{-1}{+} \quad \frac{1}{-}$
 $[2, +1] \cap \emptyset$ $\emptyset$

$|x|-1=0 \Rightarrow |x| \neq 1 \Rightarrow x \neq \pm 1 \Rightarrow D_f = D \cap P = [-1, 1) - \{-1\}$

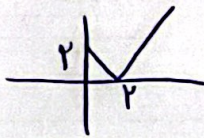
ساختار

$$||x-2|-1|-k \neq 0$$

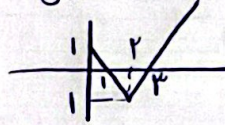
۲: ①



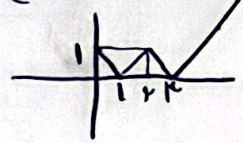
②



③



④



⑤ عند این کسر
را $|x+1|-1-k$

این نمودار را باید که واحد یاسن کنیم به طوری که نقطه از روی نمودار روی خط باشد نه خارج از آن
مسئله $k=1$

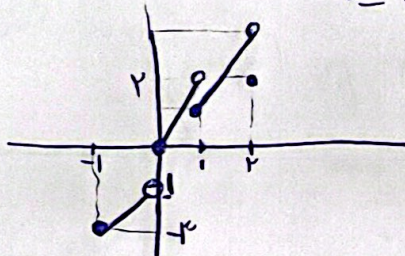
$$x=2 \Rightarrow 2x-2$$

$$0 \leq x < 1 \Rightarrow 2x$$

$$-2 \leq x \leq -1 \Rightarrow x+2$$

$$1 \leq x < 2 \Rightarrow 2x-1$$

$$-1 \leq x < 0 \Rightarrow 2x-1$$



$$x=y \Rightarrow y=x$$

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

$$\Rightarrow (x+a)(x-b) = x^2 - 2x + 2 \Rightarrow x^2 + (a-b)x - ab = x^2 - 2x + 2$$

$$\boxed{a-b=-2}$$

$$\bullet ab=2$$

$$x=1 \Rightarrow \frac{a+2}{b+1} = c+1 \Rightarrow \text{...} \Rightarrow 2b+2=a+2$$

$$\Rightarrow 2-2a+2=a+2 \Rightarrow 2a=0 \Rightarrow a=0$$

$$x=2 \Rightarrow \frac{2^2 + 2 \times 2 - 2 - 2}{2^2 - 1} = \frac{12}{3} = 4 = 2+c \Rightarrow c=2$$

$$x=-1 \Rightarrow \frac{1-a}{b-1} = c-1 \Rightarrow b-1=2-a \Rightarrow b=3-a$$

$$b+c = \frac{1}{2} + 2 = \boxed{\frac{5}{2}}$$

$$x=1 \Rightarrow 1f = 1\sqrt{f-b} + 1k-1$$

$$\Rightarrow g = \sqrt{b-f} + 1k$$

①

~~تفاوت بین دو عبارت~~

تفاوت بین دو عبارت = 1 : 05

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

$$\left. \begin{array}{l} D_f : f-x > 0 \Rightarrow x > \frac{f}{f} \\ D_g : b-fx > 0 \Rightarrow x < \frac{b}{f} \end{array} \right\} \rightarrow \frac{f}{f} = \frac{b}{f} \Rightarrow fa = b$$

$$1f - g = 1\sqrt{f-b} + 1k-1 - \sqrt{b-f} - 1k = k$$

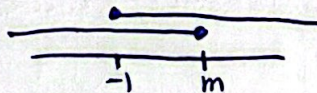
$$\Rightarrow \left. \begin{array}{l} 1\sqrt{f-b} - \sqrt{b-f} = 1k+1 \\ \downarrow \quad \downarrow \\ b \leq f, b \geq f \Rightarrow b=f \end{array} \right\} \Rightarrow 1k+1=0 \Rightarrow k=-1$$

$$fa = b \Rightarrow a = \frac{f}{f}$$

$$fa - \frac{b}{f} - k = f-1-1 = ①$$

②

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



$$D_f : m-x > 0 \Rightarrow x < m$$

$$D_g : x+1 > 0 \Rightarrow x > -1$$

$$\Rightarrow m=1$$

$$f(x) - g(x) = \sqrt{x} \Rightarrow x+n - 1\sqrt{x} = \sqrt{x} \Rightarrow n = \sqrt{x} - x$$

$$m+n = 1 + \sqrt{x} - x = \boxed{1 + \sqrt{x}}$$

③

$$x=1 \Rightarrow x-1 = \frac{1}{f} \Rightarrow x = 1 + \frac{1}{f}$$

تفاوت

$$1 \leq x < 2 \Rightarrow x-1 = \frac{1}{f} \Rightarrow x = 1 + \frac{1}{f} \checkmark$$

$$-1 \leq x < 1 \Rightarrow x+1 = \frac{1}{f} \Rightarrow x = -1 + \frac{1}{f} \checkmark$$

$$0 \leq x < 1 \Rightarrow x = \frac{1}{f} \checkmark \quad -1 \leq x < 0 \Rightarrow x+1 = \frac{1}{f} \Rightarrow x = -1 + \frac{1}{f} \checkmark$$