

$$\rightarrow f(x) = x^2 + 2x + 1 + 4x^2 - 4x + 1 + mx^2 + nx + m = (1+m)x^2 + (n-4)x + 2+m$$

$$\begin{cases} 1+m=0 \rightarrow m=-1 \\ n-4=0 \rightarrow n=4 \end{cases} \rightarrow f(x) = 2-4x = -4x / g(x) = \{(4, -1), (4, p+1), (p+2, -1), (-9, p+k)\}$$

$$p+1=-1 \rightarrow p=-2 \quad p+k=-1 \rightarrow -2+k=-1 \rightarrow k=1$$

$$\Rightarrow m+n+p+k = -1+4-2+1 = 2$$

الف) $\frac{x-2}{x^2-2x^2-1} \geq 0 \rightarrow \frac{x-2}{(x^2-4)(x^2+1)} \geq 0$

$$\rightarrow \frac{x-2}{(x-2)(x+2)(x^2+1)} \rightarrow \frac{-2}{x+2} + \frac{2}{x-2} + \frac{2}{x^2+1}$$

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

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

$$\rightarrow |x|+x \geq 0 \rightarrow \begin{cases} 2x & x > 0 \\ 0 & x = 0 \\ 0 & x < 0 \end{cases} \rightarrow (0, +\infty)$$

$$D_f = [1, +\infty)$$

$$\rightarrow ||x-2|-1| = k \quad (k \geq 0)$$

$$\text{I} \quad |x-2|-k = k \rightarrow |x-2| = k+1 \rightarrow x-2 = k+1 \rightarrow x = k+3$$

$$\text{II} \quad (k \geq -1) \rightarrow 2-x = k+1 \rightarrow x = 1-k$$

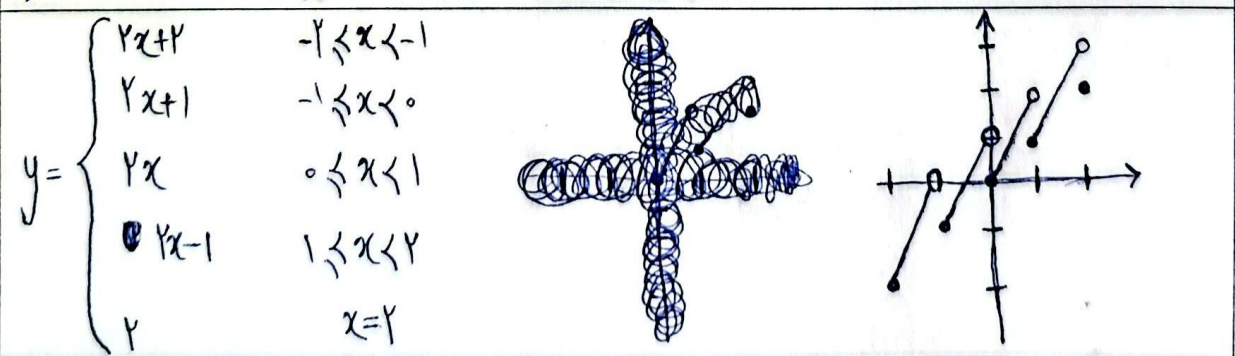
$$\text{III} \quad (1 \geq k) \rightarrow 2-x = 1-k \rightarrow x = k+1$$

$$\text{IV} \quad |x-2|-1 = -k \rightarrow |x-2| = 1-k \rightarrow x-2 = 1-k \rightarrow x = 3-k$$

$$\text{V} \quad 2-x = 1-k \rightarrow x = k+1$$

$$\text{VI} \quad k=1 \rightarrow x=4, 0, 2 \checkmark$$

$$\text{VII} \quad k=0 \rightarrow x=1, 3 \checkmark$$



$$\rightarrow \frac{x^2 - 7x + 12 + bx + ab}{x+a} = \frac{x^2 + (b-7)x + 12+ab}{x+a} \rightarrow 12+ab=0$$

$$\rightarrow \frac{x(x+b-7)}{x+a} \rightarrow (x+b-7)=(x+a) \rightarrow a=b-7 \rightarrow b(b-7)=-12 \rightarrow b=1, 12$$

$$S = \{-7\} \leftarrow \begin{matrix} a_1 - b_1 = -12 - 1 = -13 \\ a_2 - b_2 = -12 - 12 = -24 \end{matrix}$$

$$\rightarrow \boxed{a = -12, -1}$$

$$\rightarrow \frac{x^2(x+1) - (x+1)}{x^2-1} = \frac{(x^2-1)(x+1)}{x^2-1} = x+1 \rightarrow C=1$$

$$\begin{matrix} x=1 \rightarrow \frac{a+1}{b+1} = 1 \rightarrow a+1=b+1 \\ x=-1 \rightarrow \frac{-a+1}{b-1} = 1 \rightarrow -a+1=b-1 \end{matrix}$$

$$\oplus \rightarrow 2 = 2b \rightarrow b=1$$

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

$$D_{f \circ g} = D_{f \circ g} = [1, 7] \rightarrow x=3 \rightarrow \sqrt{m-3} + n - \sqrt{(3)+2} = 6\sqrt{2}$$

$$\rightarrow \sqrt{m-3} + n = 8\sqrt{2} \rightarrow \sqrt{m-3} = 8\sqrt{2} - n \rightarrow m-3 = (8\sqrt{2} - n)^2$$

سوال 9

$$n=0 \Rightarrow m+n=131+0=131 \Rightarrow m=131$$

سوال 8

$$g(x) \rightarrow b-7x \geq 0 \rightarrow \frac{b}{7} \geq x$$

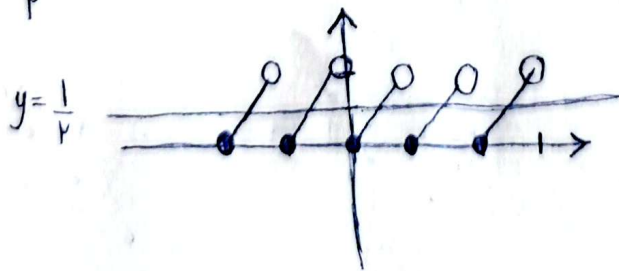
$$f(x) \rightarrow 7x-3a \geq 0 \rightarrow x \geq \frac{3a}{7}$$

$$D_f \cap D_g = \{1\} \rightarrow \frac{b}{7} = \frac{3a}{7} = 1 \rightarrow \begin{matrix} b=7 \\ a=7/3 \end{matrix}$$

$$2f-g \xrightarrow{x=1} 2(\sqrt{1-1} + k-1) - (\sqrt{1-1} + 3k) = 2k-2-3k = -k-2 = k \rightarrow k=-1$$

$$\rightarrow 3a - \frac{b}{7} - k = 7 - 1 + 1 = 7 \rightarrow \text{جواب 7}$$

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



مقدار 1/2

$$\Rightarrow \text{جواب 7}$$