

$$f(m) = (n+1)^2 + (m-1)^2 + mn + 1 + mn + mn = n^2 + 1 + m^2 + 2m + 1 - 2m + mn + mn + mn$$

$$= (10+m)n^2 + (n-1)m + 1 + mn$$

$\downarrow$ $\downarrow$
 -10 K

المعادلة تكون صحيحة فقط إذا كان n زوجي

$$g(n) = \left\{ \begin{matrix} (10+m)n^2 \\ (n-1)m \\ (10+m-1) \\ (-9, 10+K) \end{matrix} \right\}$$

$\downarrow$ $\downarrow$ $\downarrow$
 -10 K $-11+K=-9$

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

$$10+K=-1 \Rightarrow -11+K=-1 \Rightarrow K=10$$

$$m+n+p+K = -10+K-11+10 = -5$$

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

$$\frac{x^2 - 1}{x^2 - 2x - 1} \geq 0$$

$$x^2 - 1 \geq 0 \Rightarrow x^2 - 1 \geq 0$$

$$x = \frac{1 \pm \sqrt{1-4(-1)}}{2} = \frac{1 \pm 2}{2} = 1, -1$$

$$x^2 - 1 \leq 0$$

$$x^2 - 1 \leq 0 \Rightarrow x = \pm 1$$

$$-1 \leq x \leq 1$$

$$D_f = (-1, 1) - \{0\}$$

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

$$x^2 - 2x - 1 \neq 0 \Rightarrow x^2 - 2x - 1 \neq 0 \Rightarrow x \neq 1 \pm \sqrt{2}$$

$$x^2 - 2x - 1 \neq 0$$

$$-1 \notin [1, 2] \Rightarrow x \notin (-1, 2)$$

$$D_f = \mathbb{R} - (-1, 2)$$

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

$$1 - (x^2 - 1) \geq 0 \Rightarrow 1 - (x^2 - 1) \geq 0$$

$$-1 \leq x^2 - 1 \leq 1$$

$$x \in [-1, 1] \cup [1, 2] \cup [2, 3]$$

$$1 - (x^2 - 1) > 0 \Rightarrow x \in (0, 2) \cup [2, 3]$$

$$D_f = I \cup II = [1, 2]$$

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

$$1 - (x^2 - 1) \geq 0 \Rightarrow 1 - (x^2 - 1) \geq 0$$

$$1 - (x^2 - 1) \geq 0 \Rightarrow 1 - (x^2 - 1) \geq 0$$

$$x^2 - 1 \leq 1$$

$$x^2 - 1 \geq 1$$

$$x^2 - 1 \geq 1 \Rightarrow x^2 - 2 \geq 0$$

$$x^2 - 2 \geq 0 \Rightarrow x \geq \sqrt{2}$$

$$x^2 - 2 \geq 0 \Rightarrow x \leq -\sqrt{2}$$

$$x \in [-\sqrt{2}, \sqrt{2}] \cup [\sqrt{2}, 2]$$

$$x^2 - 1 \leq 1$$

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

$$x^2 - 2 \leq 0 \Rightarrow -\sqrt{2} \leq x \leq \sqrt{2}$$

$$x \in [-\sqrt{2}, \sqrt{2}] \cup [\sqrt{2}, 2]$$

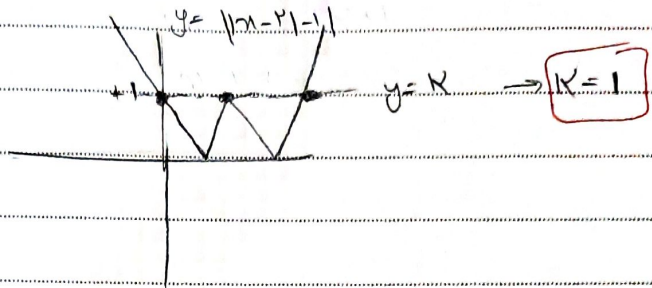
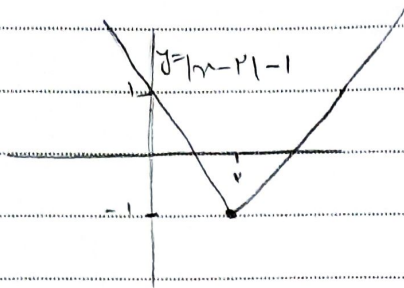
$$|x| - 1 \neq 0 \Rightarrow |x| \neq 1 \Rightarrow x \neq \pm 1$$

$$D_f = I \cup II = [-1, 1] - \{0\}$$

$$y = \frac{1}{|x-2|-1-K}$$

$$||x-2|-1|-K \neq 0 \rightarrow ||x-2|-1| \neq K$$

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$$y = x^2 - [x] \quad [-2, 2]$$

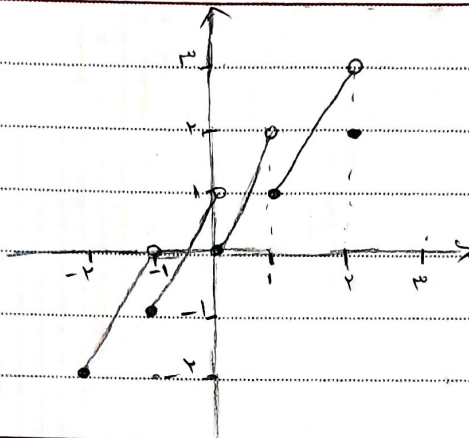
$$-2 \leq x < -1 \rightarrow y = x^2 + x$$

$$-1 \leq x < 0 \rightarrow y = x^2 + 1$$

$$0 \leq x < 1 \rightarrow y = x^2$$

$$1 \leq x < 2 \rightarrow y = x^2 - 1$$

$$x = 2 \rightarrow y = x^2$$



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$$f(x) = \frac{x^2 - x + 3}{x+a} + b \quad x=0 \rightarrow f(0) = \frac{3}{a} + b = 0 \rightarrow \frac{3}{a} + ab = 0$$

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$$x=1 \rightarrow f(1) = \frac{1-x^2}{1+a} + b = 1 \rightarrow \frac{0}{1+a} + b = 1 \rightarrow \frac{b+ab}{1+a} = 1 \rightarrow b+ab = 1+a$$

$$\rightarrow b - 3 = 1+a \rightarrow a-b = -4$$

$$x=0 \rightarrow f(0) = \frac{-2}{-1} = 2 \rightarrow g(0) = 0 + c = 2 \rightarrow c = 2$$

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$$x=1 \rightarrow f(1) = \frac{a+2}{1+b} \quad g(1) = 1+2=3 \rightarrow \frac{a+2}{1+b} = 3 \rightarrow a+2 = 3+3b \rightarrow a = 3b+1$$

$$x=-1 \rightarrow f(-1) = \frac{-a+2}{-1+b} \quad g(-1) = -1+2=1 \rightarrow \frac{-a+2}{-1+b} = 1 \rightarrow -a+2 = -1+b \rightarrow a = 3-b$$

$$\rightarrow 3b+1 = 3-b \rightarrow 4b = 2 \rightarrow b = \frac{1}{2} \quad b+c = \frac{1}{2} + 2 = \frac{5}{2}$$

$$\frac{5}{2}$$

$$y = g(x) \rightarrow \text{عوضه است} \quad g(x) = \sqrt{b-x+3x}$$

$$y = 2\sqrt{x-3} + 2x - 2 \quad y = g(x) = 2\sqrt{x-3} + 2x - 2 - (\sqrt{b-x+3x}) = 2$$

$$\rightarrow 2\sqrt{x-3} - \sqrt{b-x+3x} = 2 \rightarrow \sqrt{x-3} = 1 \rightarrow x-3 = 1$$

$$D_f = D_f \cap D_g \quad D_g = 2x+2 \geq 0 \rightarrow 2x \geq -2 \rightarrow x \geq -1 \rightarrow D_f = x \leq 5$$

$$D_f = m-1 \geq 0 \rightarrow m \geq 1 \rightarrow m = 5$$

$$f - g(3) = 4\sqrt{2} \rightarrow g(3) = \sqrt{3 \times 3 + 3} = \sqrt{12} = 2\sqrt{3} \rightarrow f - 2\sqrt{3} = 4\sqrt{2} \rightarrow f(3) = 4\sqrt{2} + 2\sqrt{3}$$

$$f(3) = \sqrt{-3+n} = 2+n \rightarrow 2+n = 4\sqrt{2} \rightarrow n = 4\sqrt{2} - 2$$

$$m+n = 4\sqrt{2} - 2 + 5 = 4\sqrt{2} + 3$$

$$y = \frac{1}{x} \quad (x-5) = \frac{1}{x} \rightarrow x-5 = \frac{1}{x}$$

$$-2 < x < 4 \rightarrow y = x+2$$

$$-1 < x < 0 \rightarrow y = x+1$$

$$0 < x < 1 \rightarrow y = x$$

$$1 < x < 2 \rightarrow y = x-1$$

$$x=2 \rightarrow y=0$$

