

1 $m+n+p+k=?$ ۵ $f(x) = (x+1)^2 + (x-1)^2 + mx^2 + nx + mn$

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

3 $f(x) = x^2 + 2x + 1 + 9x^2 - 4x + 1 + mx^2 + nx + mn$

4 $f(x) = (1+9+m)x^2 + (2-4+n)x + 1+1+mn$

در تابع ثابت نباید متغیری داشته باشیم فقط باید عدد داشته باشیم

6 $10+m=0 \rightarrow m=-10$ / $-6+n=0 \rightarrow n=6$

7 $g(x) = \{(x, -10)(6, p+1)(p+2, -1)(-9, p+k)\}$

9 $-10 = p+1 \rightarrow p=-11$

10 $g(x) = \{(x, -10)(-9, -1)(-9, -11+k)\}$

11 $-1 = -11+k \rightarrow k=10$

12 $m+n+p+k = (-10) + 6 + (-11) + 10 = -5$

14 الف) $y = \sqrt{\frac{x-2}{x^2-2x-1}}$ ۲ $\textcircled{I}$ در مخرج نباید برابر صفر باشد

۱۵ $\textcircled{I}$ $x^2 - 2x - 1 = 0$ $x^2 = t$ $t^2 - 2t - 1 = 0$ $(t-2)(t+1) = 0$

۱۶ $t = 2$ و $t = -1$ $t = x^2$ $x^2 = 2 \rightarrow x = \pm\sqrt{2}$ $x^2 = -1$ $x = \pm i$

۱۷ $x = \pm\sqrt{2}$ $x = \pm i$

۱۸ $\textcircled{II}$ $\frac{x-2}{x^2-2x-1} \geq 0$ $\frac{-2}{-1+1} \Rightarrow (-2, +\infty) - \{2\}$

۱۹ $x = \pm\sqrt{2}$

۲۰ $DP = (-2, +\infty) - \{2\}$

۲۱



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

۴- مخرج نباید برابر با صفر باشد!

$$\text{مخرج} \Rightarrow x - 2[-x] = 0 \rightarrow x = 2[-x] \rightarrow x = [-x]$$

$$\rightarrow [2, 2) \in -x \rightarrow (-2, 2] \subseteq x \Rightarrow$$

$$\text{I) } f = 1\mathbb{R} - (-2, 2] \rightarrow ?$$

$$\text{I) } f(x) = \frac{\sqrt{x(x^2-1)}}{\sqrt{|x|+x}} \quad \text{II) زیر اعداد کامل باید + باشد} \quad \text{III) مخرج نباید برابر صفر باشد}$$

$$\text{I) مخرج} \Rightarrow \sqrt{|x|+x} = 0 \rightarrow |x|+x=0 \rightarrow \mathbb{R}^- \cup \{0\} \notin D_f$$

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

$$\text{III) } |x|+x > 0 \rightarrow \mathbb{R}^+$$

$$\text{II} \cap \text{III} \Rightarrow ([1, +\infty) - \{0\}) \rightarrow ?$$

$$\rightarrow f(x) = \frac{\sqrt{|x-2|-x^2}}{|x|-1} \quad \text{I) مخرج نباید برابر صفر باشد} \quad \text{II) زیر اعداد کامل باید + باشد}$$

$$\text{I) مخرج} \Rightarrow |x|-1=0 \rightarrow |x|=1 \rightarrow x = \pm 1 \notin D_f$$

$$\text{II) } \begin{array}{l} x \leq 2 \\ -x^2 - x + 2 \geq 0 \rightarrow -(x+2)(x-1) \geq 0 \rightarrow \frac{-2}{-2+1-1} = \frac{-1}{-1+1-1} = \frac{-1}{-1} = 1 \\ \Rightarrow [-2, 1] \end{array}$$

$$x > 2 \quad -x^2 + x - 5 \geq 0 \xrightarrow{\Delta < 0} \emptyset$$

$$\Rightarrow D_f = [-2, 1) - \{-1\} \rightarrow ?$$



$$k = ? \quad \text{داده } Df = R - \{ \text{معدود} \} \quad y = \frac{1}{|1x-2|-1-k}$$

داده این تابع R است به جز ۲ و ۱

$$\Rightarrow |1x-2|-1-k=0 \Rightarrow |1x-2|-1=k$$

$$\Rightarrow |x-2|-1=k \Rightarrow |x-2|=k+1 \Rightarrow x-2=k+1 \Rightarrow x=k+3$$

$$\Rightarrow x-2=-k-1 \Rightarrow x=-k+1$$

$$\Rightarrow |x-2|-1=-k \Rightarrow |x-2|=-k+1 \Rightarrow x-2=-k+1 \Rightarrow x=-k+3$$

$$\Rightarrow x-2=k-1 \Rightarrow x=k+1$$

$$\text{I} \Rightarrow k+3=-k+1 \Rightarrow 4k=-2 \Rightarrow k=-1/2 \rightarrow \text{غلط}$$

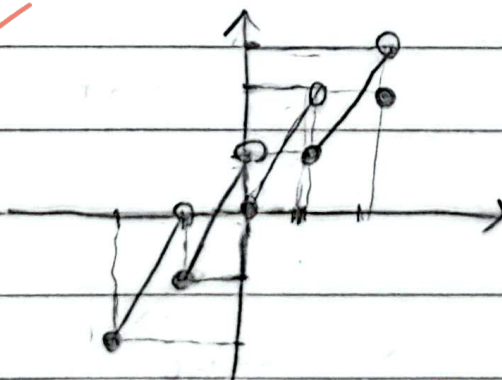
$$\text{II} \Rightarrow -k+3=k+1 \Rightarrow 2k=2 \Rightarrow k=1$$

فرد برای هر عدد
ریشه را بیابیم
سپس معادله را بنویسیم

$$Df = [-2, 2] \quad y = |x - [x]|$$

$$[-2, -1) \rightarrow 2x+5 \quad [-1, 0) \rightarrow 2x+1 \quad [0, 1) \rightarrow 2x$$

$$[1, 2) \rightarrow |x-1| \quad [2, 2] \rightarrow 4$$



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$$a-b=? \leftarrow \text{isloq} \leftarrow f(x) = \frac{x^2 - \varepsilon x + \tau}{x+a} + b \quad (4) \quad \text{✓}$$

$$f(x) = x \leftarrow \text{isloq} \leftarrow$$

$$x = \frac{x^2 - \varepsilon x + \tau}{x+a} + b \rightarrow \frac{x^2 - \varepsilon x + \tau + b(x+a)}{x+a} = x$$

$$\rightarrow \frac{x^2 + (b-\varepsilon)x + \tau + ab}{x+a} = x \rightarrow \boxed{-\tau = ab}$$

$$\rightarrow x^2 + (b-\varepsilon)x = x^2 + ax \rightarrow b-\varepsilon = a \rightarrow \boxed{-\varepsilon = a-b}$$

$$g(x) = x+c, f(x) = \begin{cases} \frac{x^2 + \tau x - x - \tau}{x-1} : x \neq \pm 1 \\ \frac{a x + \tau}{x+b} : x = \pm 1 \end{cases} \quad (5) \quad \text{✓}$$

$$\frac{x^2 + \tau x - x - \tau}{x-1} \Big| \frac{x^2 - 1}{x+1} = x+c \rightarrow \boxed{c = +\tau} \quad \text{✓}$$

$$x=+1, x+\tau \Rightarrow 1+\tau = \tau \rightarrow \frac{a+\tau}{1+b} = \tau \rightarrow a+\tau = \tau + \tau b$$

$$x=-1, x+\tau \Rightarrow -1+\tau = 1 \rightarrow \frac{a+\tau}{-1+b} = 1 \rightarrow -a+\tau = -1+b$$

$$\begin{cases} a+b = \tau \quad (6) \rightarrow a+\tau b = a \\ a-\tau b = 1 \quad (7) \rightarrow a-\tau b = 1 \end{cases} \Rightarrow \varepsilon a = 10 \rightarrow \boxed{a = \tau/c} \quad \text{✓}$$

$$\boxed{b = \tau/c} \quad \text{✓}$$

$$b+c = \tau + \tau = \tau \quad \text{✓}$$

$$f(x) = \sqrt{5x-4} + k, \quad g(x) = \sqrt{b-5x} + 2k, \quad f(x) = \sqrt{5x-4} + k-1 \quad (1)$$

$$\{1\} = Dg, \quad Df = \{1\} \text{ and } Dg = \{1\}$$

! وای که $x \leq 1$ و $x \geq 1$ و $x = 1$

$$Df = 5x-4 \geq 0 \rightarrow x \geq \frac{4}{5} \rightarrow \frac{4}{5} = 1 \rightarrow \boxed{a = \frac{4}{5}} \quad \checkmark$$

$$Dg = b-5x \geq 0 \rightarrow b \geq 5x \rightarrow \frac{b}{5} = 1 \rightarrow \boxed{b = 5} \quad \checkmark$$

$$g(1) = \sqrt{5-5} + 2k = 2k \quad \text{and} \quad f(1) = \sqrt{5-4} + k-1 = k-1$$

$$f-g = \{(1, 4k-2-k)\} = \{(1, k-2)\} = \{(1, k)\}$$

$$\Rightarrow k = -k-2 \rightarrow 2k = -2 \rightarrow k = -1 \quad \checkmark$$

$$\Rightarrow 4a - \frac{b}{5} - k = 4 - \frac{5}{5} - (-1) = 4 - 1 + 1 = 4 \quad \checkmark$$

$$f-g(x) = 4\sqrt{x}, \quad Df \times g = [-1, 2], \quad g(x) = \sqrt{2x+1}, \quad f(x) = \sqrt{m-x} + n \quad (2)$$

$$Df = m-x \geq 0 \rightarrow m \geq x \quad \text{and} \quad Dg = 2x+1 \geq 0 \rightarrow x \geq -1 \quad \text{and} \quad Df \times g = Df \cap Dg = [-1, m] \quad \text{and} \quad f = m+n$$

$$Df = 2x+1 \geq 0 \rightarrow x \geq -1 \quad \text{and} \quad Dg = m-x \geq 0 \rightarrow x \leq m \quad \text{and} \quad [-1, m] = [-1, 2] \rightarrow \boxed{m = 2}$$

$$f(x) = \sqrt{x} + n = 2+n \quad \text{and} \quad g(x) = \sqrt{2x+1} = \sqrt{1} = 1 \quad \checkmark$$

$$f-g(x) = 2+n-1 = 1+n = 4\sqrt{x} \rightarrow 2+n = 4\sqrt{x}$$

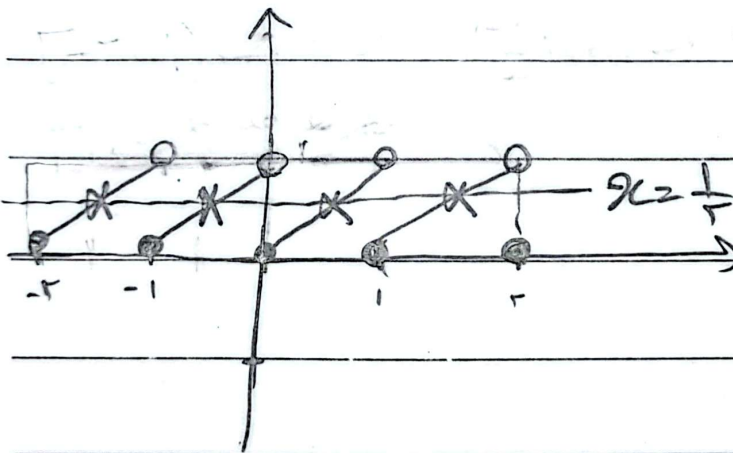
$$\Rightarrow \boxed{n = 4\sqrt{x} - 2} \Rightarrow m+n = 2 + 4\sqrt{x} - 2 = 4\sqrt{x} \quad \checkmark$$



Senobar

$$DP_2[-2, 2] \leftarrow y_2(-1)^x (x - [x]) = \frac{1}{7}$$

$$\Rightarrow y = x - [x] = \frac{1}{7}$$



→ ϵ جواب $\rightarrow \epsilon$ نقطه بر فردی