

$$\begin{aligned} f(a) &= (a+1)^2 = a^2 + 2a + 1 \rightarrow f(a) = a^2 + 2a + 1 \\ f(-a) &= (-a+1)^2 = a^2 - 2a + 1 \rightarrow f(-a) = a^2 - 2a + 1 \end{aligned} \quad \left\{ \begin{aligned} a^2 + 2a + 1 &= a^2 - 2a + 1 \\ 4a &= 0 \end{aligned} \right. \quad \alpha = 0$$

$$f(1+\sqrt{3}) = \sqrt{1+\sqrt{3}} + \frac{1}{\sqrt{1+\sqrt{3}}} + 2 \quad f(1-\sqrt{3}) = \sqrt{1-\sqrt{3}} + \frac{1}{\sqrt{1-\sqrt{3}}} + 2$$

$$\begin{aligned} (\sqrt{1+\sqrt{3}} + \sqrt{1-\sqrt{3}}) + \left(\frac{1}{\sqrt{1+\sqrt{3}}} + \frac{1}{\sqrt{1-\sqrt{3}}} \right) + 2 &= \left(\frac{\sqrt{1+\sqrt{3}} + \sqrt{1-\sqrt{3}}}{\sqrt{1+\sqrt{3}}\sqrt{1-\sqrt{3}}} \right) + \left(\frac{\sqrt{1+\sqrt{3}} + \sqrt{1-\sqrt{3}}}{\sqrt{1+\sqrt{3}}\sqrt{1-\sqrt{3}}} \right) + 2 \\ &= \frac{2\sqrt{1+\sqrt{3}} + 2\sqrt{1-\sqrt{3}}}{\sqrt{1-\sqrt{3}} + \sqrt{1+\sqrt{3}}} + 2 = \frac{2\sqrt{1+\sqrt{3}} + 2\sqrt{1-\sqrt{3}}}{2} + 2 = 2\sqrt{1+\sqrt{3}} + 2 \end{aligned}$$

$$f(-x) - f(x) = (-x)^2 - (-x) = x^2 + x$$

$$f(x) - f(-x) = x^2 - x$$

$$f(x) - f(-x) = x^2 - x$$

$$-2f(x) = x^2 - x$$

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

$$(0+2)f(0) - f(0+2) = f(0)^2 - m(0) + 3m - 1$$

$$2f(0) = 3m - 1$$

$$f(0) = \frac{3m-1}{2}$$

باید $f(0)$ را بر حسب m بدست آوری

بعد دو معادله درجه اول حل کنی تا m بدست

آمد و بعد $f(0)$ را بدست آوری (پاسخ صنف را بنویس)

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$$(ax+b) + \left(\frac{a}{x} + b \right) = \frac{3x^2 - 12x + 3}{x}$$

$$ax + \frac{a}{x} + 2b = 3x - 12 + \frac{3}{x}$$

$$\begin{aligned} \rightarrow 3 & \\ \rightarrow -9 & \end{aligned}$$

$$f(x) = 3x - 4$$

$$f(-1) = 3(-1) - 4 = -7$$

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

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

$$= -\sqrt{(1-x)^3} = g(x)$$

$$f: 1-x \geq 0 \rightarrow x \leq 1 \quad D_f = (-\infty, 1]$$

$$g: (1-x)^3 \geq 0 \rightarrow 1-x \geq 0 \quad x \leq 1 \quad D_g = (-\infty, 1]$$

$$\left\{ \begin{aligned} D_f &= D_g \\ \rightarrow f &= g \end{aligned} \right.$$

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$$f: x \geq 0 \quad D_f = [0, +\infty)$$

$$g: x^3 \geq 0 \quad x \geq 0 \quad D_g = [0, +\infty)$$

$$f(x) = x\sqrt{x}$$

$$x = \sqrt{x^2}$$

$$f(x) = \sqrt{x^2} \cdot \sqrt{x} = \sqrt{x^3} = g(x)$$

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$$f(x) = [\sqrt{x} - \sqrt{x}] = [x-x] = 0$$

$$g(x) = \sqrt{x - |x|} = x - x = -x$$

$$g(x) = \sqrt{x - |x|} = 0$$

~~f=g~~

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$$D_f \cap D_g = \{0, 1, 2, 3\}$$

(9)

$$\text{الف)} \frac{f(1) + g(1)}{f(1) - g(1)} = \frac{1+1}{1-1} = \text{تعیین نشده}$$

$$\text{ب)} \frac{f(2) + g(2)}{f(2) - g(2)} = \frac{2+2}{2-2} = \text{تعیین نشده}$$

$$\text{ج)} \begin{cases} f(0) = 0 \\ g(-1) = 1 \end{cases} \quad 0 \times 1 = 0$$

د

$$\text{الف)} \begin{cases} 3x - 1 = 2 \\ 3x = 3 \\ x = 1 \\ g(1) = f(2) = 1 \end{cases}$$

$$\begin{cases} 3x - 1 = -1 \\ 3x = 0 \\ x = 0 \\ g(0) = f(-1) = 2 \end{cases}$$

$$\begin{cases} 3x - 1 = 0 \\ 3x = 1 \\ x = \frac{1}{3} \\ g(\frac{1}{3}) = f(0) = 0 \end{cases}$$

$$\begin{cases} 3x - 1 = -2 \\ 3x = -1 \\ x = -\frac{1}{3} \\ g(-\frac{1}{3}) = f(-2) = 2 \end{cases}$$

(10)

$$\begin{cases} 3x - 1 = 4 \\ 3x = 5 \\ x = \frac{5}{3} \\ g(\frac{5}{3}) = f(4) = -1 \end{cases}$$

د

ب) تنها در دو حالت است
بر حسب قدر مطلق

$$|x| = 2 \rightarrow x = 2, x = -2$$

$$|x| = 3 \rightarrow x = 3, x = -3$$

$$|x| = 0 \rightarrow x = 0$$

$$h = \{(2, 1)(-2, 1)(0, 2)(3, -1)(-3, -1)\}$$

$$x = 0 \quad 2f(0) = 3m - 1 \rightarrow f(0) = \frac{3m - 1}{2}$$

(11)

$$x = -2 \quad 4f(0) = 4(-2)^2 + 2m + 3m - 1 \rightarrow f(0) = \frac{16m + 16}{4}$$

$$\frac{16m + 16}{4} = \frac{3m - 1}{2} \rightarrow 16m + 16 = 12m - 4 \rightarrow 4m = -20 \rightarrow m = -\frac{5}{2} \notin \mathbb{Z}$$

$$f(0) = \frac{3m - 1}{2} \in \mathbb{Z} \quad \frac{16 + 16m}{4} \sim f(0) = \frac{3(4, 25) - 1}{2} = \boxed{4, 25 \in \frac{25}{2}}$$

$$f(n) = [\sqrt{n} - [\sqrt{n}]] \rightarrow \sqrt{n} \rightarrow n \rightarrow D_f = [0, +\infty)$$

$$g(n) = \sqrt{n - |n|} \rightarrow n - |n| \rightarrow D_g = [0, +\infty)$$

(12)

$$f(n) = [\sqrt{n}] - [\sqrt{n}] = 0 \quad \text{عدد صحیح از برکت مرآید بیرون ت}$$

$$g(n) = 0 \quad \text{آنها برابرند!} \quad n - |n| = n - n = 0 \quad \text{نسبت صفر است!}$$

