

$$y = \sqrt{f(x) - x + 1} \xrightarrow[\text{نامشخص}]{\text{زیر رادیکال}} f(x) \geq x - 1 \xrightarrow[\text{رضای اول}]{[x] > f = \frac{1}{2} \rightarrow [x] > \frac{1}{2} \rightarrow x > \frac{1}{2}} |x - 1| \geq x - 1 \rightarrow x \geq 0$$

$$f(x) \geq x - 1 \xrightarrow[\text{رضای دوم}]{[x] \leq f = \frac{1}{2} \rightarrow (-\infty, \frac{1}{2})} x + 1 \geq x - 1 \rightarrow 2 \geq -1 \rightarrow x \geq -\frac{1}{2}$$

$$\xrightarrow{\text{ایکجا}} [\infty, +\infty) \cup [-\frac{1}{2}, \frac{1}{2}) = [-\frac{1}{2}, +\infty)$$

$$y = \frac{3(1 + x^2 + 2x + 1)}{(4x^2 + 4x + 1)^2} = \frac{3(2x + 1)^2}{(4x^2 + 4x + 1)^2} = \frac{3}{4x + 1} \quad D_y = \left\{ x \mid x \neq -\frac{1}{4} \right\}$$

$$4x + 1 \neq 0 \rightarrow 4x \neq -1 \rightarrow x \neq -\frac{1}{4}$$

$$\frac{x^3 + 2x^2 - x - 1}{x^2 - x^2} \xrightarrow{x^2 + 2x + 1} \rightarrow x^3 + 2x^2 - x - 1 = (x - 1)(x + 1)(x + 2)$$

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

$$\begin{aligned} x = 1 &\rightarrow g(x) = 3 = \frac{a + 2}{1 + b} = 3 \rightarrow 3 + 3b = a + 2 \\ x = -1 &\rightarrow g(x) = 1 = \frac{-a + 2}{-1 + b} \rightarrow \frac{-a + 2}{-1 + b} = 1 \rightarrow -a + 2 = -1 + b \rightarrow b - 1 = -a + 2 \end{aligned}$$

$$b + c = 0, a + 2 = 2, a = 2, b = 0$$

$$\frac{x^2 - 1}{x^2 + ax + b} = \frac{x + 1}{x - c} \rightarrow \text{رشته خارج اول مضاعف برابر} \rightarrow R - \{C\}$$

$$\frac{(x + 1)(x - 1)}{(x - 1)(x - 1)} = \frac{x + 1}{x - 1} \rightarrow \begin{aligned} a &= -1 \\ b &= 1 \\ c &= 1 \end{aligned} \rightarrow a + b + c = 0$$

$$f(x) = (x - 3)^2 (x - 1) \rightarrow f(x + 1) = ((x + 1) - 3)^2 ((x + 1) - 1) = (x - 2)^2 x$$

$$f(1 - x) = ((1 - x) - 3)^2 ((1 - x) - 1) = (-x - 2)^2 (-x) = -x(x + 2)^2$$

$$g(x) = x(x - 2)^2 - x(x + 2)^2 = x((x - 2)^2 - (x + 2)^2) = x(-4x) = -4x^2$$

$$f(-1) \rightarrow 1-2x=-1 \rightarrow -2x=-2 \rightarrow x=1 \xrightarrow{\text{فرض کنیم}} \sqrt{x}=\sqrt{1}=1$$

$$f(2) \rightarrow 1-2x=2 \rightarrow -2x=2 \rightarrow x=-1 \xrightarrow{\text{فرض کنیم}} \sqrt{-1}+2=1$$

$$1+2=\omega$$

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$$x+\sqrt{x}=4 \rightarrow t^2+t-4=0 \begin{cases} t=-3 \rightarrow \sqrt{x}=-3 \times \\ t=2 \rightarrow \sqrt{x}=2 \rightarrow x=4 \end{cases}$$

$$f(4)=(\sqrt{4})^2+2(\sqrt{4})=2\omega 4+12=24 \wedge$$

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$$f(x-1)=(x-1)^2+(x-1)=x^2-2x+1+x-1=x^2-x$$

$$f(1-x)=(1-x)^2+(1-x)=x^2-2x+1+1-x=x^2-3x+2$$

$$f(x-1)+f(1-x)=x^2-4x+2=2(x-1)^2$$

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$$\text{مقطع ۱ در راسته مشترک است} \rightarrow 4x-3a=-(b-4x) \rightarrow 4x-3a=-b+4x \rightarrow 3a=b$$

$$\text{مورد اول: } 3a-4=0 \rightarrow a=\frac{4}{3} \xrightarrow{3a=b} b=\frac{4}{3} \quad (2f-g)(1)=k \rightarrow$$

$$2k-2-3k=k \rightarrow -2k=2 \rightarrow k=-1 \quad 3a-\frac{b}{3}-k=\frac{4}{3}-\frac{4}{9}+1=3$$

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$$g(x)=\sqrt{2x+2} \rightarrow 2x+2 \geq 0 \rightarrow x \geq -1 \quad x=\sqrt{m} \rightarrow \sqrt{m}-\sqrt{m}=0 \rightarrow m=\sqrt{m}$$

$$f-g(x)=\sqrt{V-3}+n-2\sqrt{2}=4\sqrt{2} \rightarrow n=4\sqrt{2}+2\sqrt{2}-2=6\sqrt{2}-2$$

$$m+n=\sqrt{m}+6\sqrt{2}-2=\omega+6\sqrt{2}$$

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