

$$f(x) - x + 1 \geq 0 \rightarrow f(x) - x \geq -1$$

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$$x \geq 0 \rightarrow 2x - 1 - x = x - 1 : \text{هواره برقرار}$$

$$x < 0 \rightarrow 2x + 3 - x = x + 3 \rightarrow x + 3 \geq -1 \rightarrow x \geq -4$$

$$\rightarrow D = [-4, +\infty)$$

$$y = \frac{2x^2 + 34x^2 + 11x + 3}{(x^2 + 5x + 1)^2} = \frac{3(2x+1)^2}{(x+1)^4} \rightarrow \frac{3}{x+1} : D = \mathbb{R} - \{-1\}$$

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$$x=0 \rightarrow g(0)=c, f(0)=2 \Rightarrow c=2$$

$$\Rightarrow 0, 5 + 2 = 2, 5$$

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$$\begin{aligned} g(1)=2, f(1)=\frac{a+2}{1+b} &\rightarrow a+2=2+2b \rightarrow \begin{cases} a-2b=1 \\ a+b=3 \end{cases} \Rightarrow b=\frac{1}{3}, a=\frac{10}{3} \\ g(-1)=1, f(-1)=\frac{2-a}{b-1} &\rightarrow 2-a=b-1 \rightarrow \begin{cases} a-b=3 \\ a+b=3 \end{cases} \Rightarrow b=0, a=3 \end{aligned}$$

$$D_f = D_g, f(x) = g(x) \rightarrow g(x) = \frac{(x+1)(x-1)}{x^2 + ax + b} \rightarrow x^2 + ax + b = (x-1)^2 \Rightarrow a=-2, b=1, c=1 \Rightarrow a+b+c=0$$

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$$\begin{aligned} f(x+1) &= (x+1-2)^2(x+1-1) = (x-1)^2 x = x^3 - 2x^2 + x \\ f(1-x) &= (1-x-2)^2(1-x-1) = (-x-1)^2(-x) = -x^3 - 2x^2 - x \end{aligned} \Rightarrow g(x) = -x^3$$

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$$1-2x=3 \rightarrow x=-1 \Rightarrow f(3)=\sqrt[3]{-1}+2=1 \Rightarrow 1+3=4$$

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$$1-2x=1 \rightarrow x=0 \Rightarrow f(-1)=\sqrt[3]{1}=1$$

$$x+\sqrt{x}=9 \rightarrow x=8 \Rightarrow f(9)=9^2+3(9)=99$$

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$$f(x)=x^2+x \xrightarrow{f(-x)} f(-x)=-x^2-x : 1-x=-(x-1) \Rightarrow f(-x)=-f(x)$$

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$$f(1-x)=f(-(x-1))=-f(x-1) \Rightarrow f(x-1)+f(1-x)=f(x-1)-f(x-1)=0$$

$$b-2x \geq 0 \rightarrow b \geq 2x \quad 2x-3a \geq 0 \rightarrow \frac{2x}{3} \geq a$$

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

$$D_{f \vee g} = D_f \cap D_g \rightarrow D_f \cap [-1, +\infty) \Rightarrow D_f = (-\infty, 1] \Rightarrow m=1$$

$$\Rightarrow m+n=2+\sqrt{2}$$

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