

$$2f(a) = f(-a) + a \rightarrow 2(a+1)(v) = 2a - 1 + a$$

$$12a + 12 = 2a - 1 \rightarrow 10a = -13 \rightarrow a = \frac{-13}{10} \quad \text{ب. } \frac{-9}{10}$$

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

$$x = 2, \sqrt{x} \rightarrow \frac{1}{2\sqrt{x}} \times \frac{2\sqrt{x}}{2+\sqrt{x}} = \frac{2\sqrt{x}}{2+\sqrt{x}} = 2+\sqrt{x} \rightarrow x + \frac{1}{x} = 2+\sqrt{x} + \frac{1}{2+\sqrt{x}} = 2$$

$$f(2\sqrt{x}) + f(\frac{1}{2\sqrt{x}}) \rightarrow f(2\sqrt{x}) = f(\frac{1}{2\sqrt{x}}) \rightarrow 2f(2\sqrt{x}) = (2+2\sqrt{4})$$

$$(\sqrt{x} + \frac{1}{\sqrt{x}})^2 = x + \frac{1}{x} + 2 \rightarrow 2+2\sqrt{4} \rightarrow (\sqrt{x} + \frac{1}{\sqrt{x}})^2 = 4 \rightarrow \sqrt{x} + \frac{1}{\sqrt{x}} = \sqrt{4} \rightarrow f(2\sqrt{x}) = \sqrt{4} + 2$$

$$2f(x) - 2f(-x) = (2x^2 - 2x) \quad 2f(x) - 2f(-x) = (2x^2 - 2x) \times x^2 \quad \begin{cases} f(x) - 4f(-x) = 12x^2 - 2x \\ -9f(x) + 4f(-x) = 12x^2 + 2x \end{cases}$$

$$2f(-x) - 2f(x) = (2x^2 + 2x) \quad -2f(x) + 2f(-x) = (2x^2 + 2x) \times x^2 \quad \begin{cases} -9f(x) + 4f(-x) = 12x^2 + 2x \end{cases}$$

$$-5f(x) = 2x^2 + 2x$$

$$\Rightarrow f(x) = \frac{2x^2 + 2x}{-5}$$

$$15 \quad (x+2)f(x) - 2xf(x+2) = (x^2 - mx + m - 1)$$

$$x=0 \rightarrow 2f(0) = m-1$$

$$\begin{cases} 2f(0) = m-1 \quad x \rightarrow \infty \\ -12f(0) = -12(m-1) + 2 \end{cases}$$

$$x=2 \rightarrow 4f(0) = 14 + 2m + m-1 \quad \begin{cases} 4f(0) = 14 + 2m + m-1 \quad x^2 \\ 12f(0) = 14 + 2m + m-1 \end{cases}$$

$$12f(0) = 14 + 2m + m-1 \rightarrow f(0) = \frac{14 + 2m + m-1}{12} \quad \text{ب. } \frac{10}{12}$$

$$20 \quad f(x) + f(\frac{1}{x}) = \frac{2x^2 - 12x + 2}{x} \rightarrow ax + b + \frac{a}{x} + b = a(x + \frac{1}{x}) + 2b$$

$$\rightarrow \frac{2x + \frac{2}{x}}{x} - 12 \Rightarrow a=2, b=-9 \quad f(x) = 2x - 9$$

$$f(-1) = -9$$

$$25 \quad f(x) = (x-1)\sqrt{1-x} \rightarrow 1-x \geq 0 \rightarrow x \leq 1 \rightarrow D_f = (-\infty, 1]$$

$$g(x) = -\sqrt{(1-x)^2} \rightarrow (1-x)^2 \geq 0 \rightarrow 1-x \geq 0 \rightarrow x \leq 1 \rightarrow D_g = (-\infty, 1] \quad \text{برایند}$$

$$f(x) = x\sqrt{x} \rightarrow x \geq 0 \rightarrow D_f = [0, +\infty)$$

$$30 \quad g(x) = \sqrt{x^2} \rightarrow x^2 \geq 0 \rightarrow x \geq 0 \rightarrow D_g = [0, +\infty) \quad \text{برایند}$$

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$$\begin{aligned} f(n) &= [\sqrt{n} - [\sqrt{n}]] \rightarrow D_f = [0, 1) \quad \text{خطه ۰} \\ g(n) &= \sqrt{n - |n|} \rightarrow n - |n| \geq 0 \rightarrow n \geq |n| \rightarrow D_g = [0, 1) \quad \text{خطه ۰} \end{aligned} \quad \left. \vphantom{\begin{aligned} f(n) &= [\sqrt{n} - [\sqrt{n}]] \rightarrow D_f = [0, 1) \\ g(n) &= \sqrt{n - |n|} \rightarrow n - |n| \geq 0 \rightarrow n \geq |n| \rightarrow D_g = [0, 1) \end{aligned}} \right\} D_f = D_g$$

$$\sqrt{n} \geq [\sqrt{n}] \rightarrow \sqrt{n} - [\sqrt{n}]$$

یا صفر است یا عددی در بازه $[0, 1)$ همان چیزی است

$$\left(\frac{f+g}{f-g} \right)(1) = \frac{1+1}{1-1} = \text{تعریف نشده}$$

$$\left(\frac{f+g}{f-g} \right)(r) = \frac{r+r}{r-r} = \frac{2}{0} \rightarrow \text{تعریف نشده}$$

$$f(0) \cdot g(-1) = 0 \cdot 1 = 0$$

$$g(n) = f(n-1) \rightarrow g(n) = \left[\left(\frac{1}{n} \right) \left(\frac{1}{n} \right) \left(\frac{1}{n} \right) \right]$$

$$h(n) = f(n) \rightarrow h(n) = \left[\left(\frac{1}{n} \right) \left(\frac{1}{n} \right) \left(\frac{1}{n} \right) \right]$$