

۱۹۵۵ آفرین

نام و نام خانوادگی: پاسخنامه تشریحی تکلیف شماره ۴ کلاس: B

$$2f(\omega) = f(-2) + a \quad ; \quad f(x) = \begin{cases} (a+1)(x+2) & ; x > 1 \\ 3a+2x & ; x < 1 \end{cases}$$

$$2(a+1)(\omega+2) = 3a+2(-2)+a$$

$$(3a+2)(7) = 3a+a-4$$

$$17a+14 = 4a-4 \rightarrow 13a = -18 \rightarrow a = -\frac{18}{13} = -\frac{9}{6.5} \quad \text{جواب نهایی}$$

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

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

$$= 2\sqrt{2-\sqrt{3}} + 2\sqrt{2+\sqrt{3}} + 4 \quad , \quad \sqrt{2-\sqrt{3}} + \sqrt{2+\sqrt{3}} = \sqrt{4}$$

$$\Rightarrow 4 + 2\sqrt{4} = 8 \quad \text{جواب نهایی}$$

$$(2f(x) - 3f(-x)) = 4x^2 - 4x^2$$

$$(2f(-x) - 3f(x)) = 4x^2 + 4x^2$$

$$4f(x) - 4f(-x) = 8x^2 - 4x$$

$$4f(-x) - 4f(x) = 8x^2 + 4x$$

$$-8f(x) = 20x^2 + 4x \rightarrow f(x) = -\frac{5}{2}x^2 - \frac{x}{2} \quad \text{جواب نهایی}$$

$$(x+2)f(x) - 3xf(x+2) = 4x^2 - mx + 3m - 1$$

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

$$x = -2 \Rightarrow 0 \cdot x f(-2) - 3(-2)f(0) = 4(-2)^2 - m(-2) + 3m - 1$$

$$4f(0) = 14 + 2m + 3m - 1 \rightarrow 4f(0) = 13 + 5m \rightarrow 4\left(\frac{3m-1}{2}\right) = 13 + 5m$$

$$2(3m-1) = 13 + 5m \rightarrow 6m - 2 = 13 + 5m \rightarrow m = 15$$

$$f(0) = \frac{3(15)-1}{2} = \frac{44}{2} = 22 \quad \text{جواب نهایی}$$

$$f(x) + f\left(\frac{1}{x}\right) = \frac{3x^2 - 12x + 3}{x} \Rightarrow f\left(\frac{1}{x}\right) = \frac{a}{x} + b$$

$$f(x) = ax + b$$

$$f(x) + f\left(\frac{1}{x}\right) = ax + b + \frac{a}{x} + b = ax + \frac{a}{x} + 2b$$

$$\frac{3x^2 - 12x + 3}{x} = 3x - 12 + \frac{3}{x} \rightarrow a = 3, 2b = -12 \Rightarrow b = -6 \rightarrow f(x) = 3x - 6$$

$$f(-1) = 3(-1) - 6 = -9 \quad \text{جواب نهایی}$$

$$f(x) = (x-1)\sqrt{1-x} \rightarrow x-1 = -(1-x) \rightarrow f(x) = -(1-x)\sqrt{1-x} \rightarrow f(x) = -(1-x)^{3/2}$$

$$g(x) = -\sqrt{(1-x)^3} \quad 1-x \geq 0 \rightarrow x \leq 1$$

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

$$f(x) = g(x) \rightarrow D_{\text{هر دو}} = (-\infty, 1]$$

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

$$g(x) = \sqrt{x^3} \xrightarrow{x \geq 0} \sqrt{x^2 \cdot x} = \sqrt{x^2} \sqrt{x} = x\sqrt{x}$$

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

$$f(x) = [\sqrt{x} - \lfloor \sqrt{x} \rfloor] \rightarrow \text{دقت کنید!}$$

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

$$x \leq 0 \rightarrow x - |x| = x - (-x) = 2x < 0 \rightarrow D_g = [0, +\infty)$$

$$g(x) \xrightarrow{x \geq 0} = \sqrt{0} = 0$$

$$f(x) \neq g(x) \Leftrightarrow g(2) = 0 \quad f(2) = \sqrt{2} - \lfloor \sqrt{2} \rfloor = \sqrt{2} - 1 = \lfloor \sqrt{2} - 1 \rfloor = 0$$

$$f = \{(1, 2), (2, 3), (3, 1), (0, 0)\} \quad g = \{(-1, 1), (1, 1), (2, 3), (3, 5), (0, 2), (\sqrt{2}, 1)\}$$

$$f(1) = 2, g(1) = 1 \rightarrow (f+g)(1) = 2+1 = 3, (f-g)(1) = f(1) - g(1) = 2-1 = 1$$

$$f(2) = 3, g(2) = 3 \rightarrow (f+g)(2) = 3+3 = 6, (f-g)(2) = 3-3 = 0$$

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

$$f = \{(2, 1), (-1, 2), (0, 5), (-2, 2), (3, -1)\}$$

$$f = \{(2, 1), (-1, 2), (0, 5), (-2, 2), (3, -1)\}$$

$$g = \{(1, 1), (0, 4), (\frac{1}{2}, 5), (-\frac{1}{2}, 2), (\frac{1}{3}, -1)\}$$

$$h(x) = f(|x|) \quad |x| \geq 0 \rightarrow |x| = 0 \rightarrow x = 0 \Rightarrow h(0) = f(0) = 5$$

$$|x| = 2 \rightarrow x = 2 \rightarrow h(2) = f(2) = 1$$

$$|x| = 3 \rightarrow x = -3 \rightarrow h(3) = f(3) = -1$$

$$h = \{(-2, 1), (0, 5), (2, 1), (-3, -1), (3, -1)\}$$

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

$$g(n) = \sqrt{n-1} \rightarrow n-1 \gg 0 \rightarrow D_g = [0 + \infty)$$

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

$$g(n) = 0 \quad \text{نسبت صحیح است!} \rightarrow n \gg 0 \rightarrow n-1 = n-n = 0 \quad \text{آنها باید سیر برابرند!}$$