

$$a > 1 \Rightarrow 2f(a) = (a+1)(a) = a^2 + a$$

$$-2 \leq 1 \Rightarrow f(-2) = 3a - 4 \quad a = -\frac{9}{a}$$

$$2(va + v) = 3a - 4 + a$$

$$14a + 14 = 4a - 4$$

$$10a = -18$$

$$a = -\frac{9}{a}$$

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

$$\frac{1}{\sqrt{2 - \sqrt{3}}} = \sqrt{2 + \sqrt{3}}$$

برعکس

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

$$f(2 - \sqrt{3}) + f(2 + \sqrt{3}) = \boxed{2\sqrt{6} + 4}$$

$$\sqrt{2 - \sqrt{3}} + \sqrt{2 + \sqrt{3}} = \sqrt{6}$$

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

با جای n جایگزینی می کنیم

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

$$2f(n) - 3f(n) = 4n^2 - n \quad \times 2$$

$$-3f(n) + 2f(-n) = 4n^2 + n \quad \times 3$$

$$f(n) = \boxed{-4n^2 - \frac{2n}{5}}$$

$$-5f(n) = 20n^2 + n$$

$$4f(n) - 5f(-n) = 16n^2 - 2n$$

$$-9f(n) + f(-n) = 12n^2 + \frac{2n}{5}$$

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

$$n = -2 \quad 9f(0) = 10 + 4m$$

$$9 \times \frac{3m-1}{2} = 10 + 4m$$

$$3(3m-1) = 10 + 4m$$

$$9m - 3 = 10 + 4m \Rightarrow 5m = 13 \Rightarrow m = \frac{13}{5}$$

$$f(0) = \frac{3 \times \frac{13}{5} - 1}{2} = \boxed{\frac{14}{5}}$$

$$f(n) = an + b$$

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

$$\frac{3n^2 - 12n + 13}{n} = 3n - 12 + \frac{13}{n}$$

$$a = 3 \quad 2b = -12$$

$$b = -6$$

$$f(n) = 3n - 6$$

$$f(-1) = 3(-1) - 6 = \boxed{-9}$$

$$f(n) = (n-1)\sqrt{1-n}$$

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

برابراند

$$1-n \geq 0 \quad D_f = (-\infty, 1]$$

$$n \leq 1$$

شرط داشته برابر

$$(1-n)^3 \geq 0 \Rightarrow 1-n \geq 0 \Rightarrow n \leq 1$$

$$D_g = (-\infty, 1]$$

$$g(n) = -\sqrt{(1-n)^3} = -\sqrt{(1-n)^2(1-n)} = \\ g(n) = -(1-n)\sqrt{1-n} = (n-1)\sqrt{1-n} \\ = f(n) = g(n)$$

$$f(n) = n\sqrt{n} \quad n \geq 0 \Rightarrow D_f = [0, +\infty)$$

$$g(n) = \sqrt{n^3} \quad n^3 \geq 0 \Rightarrow n \geq 0 \Rightarrow D_g = [0, +\infty)$$

$$n^3 \geq 0 \Rightarrow n \geq 0 \Rightarrow D_g = [0, +\infty)$$

$$g(n) = \sqrt{n^3} = \sqrt{n^2 \times n} = |n|\sqrt{n}$$

$$g(n) = n\sqrt{n} = f(n) \quad \checkmark$$

$$g = f$$

چون $n \geq 0$

برابراند

$$f(n) = [\sqrt{n} - [\sqrt{n}]] \quad n \geq 0$$

$$n \geq 0$$

$$D_f = [0, +\infty)$$

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

$$n-|n| \geq 0$$

برابراند

$$n \geq 0$$

$$n-|n| = n-n = 0 \geq 0$$

$$\sqrt{n-|n|} = \sqrt{n-n} = \sqrt{0} = 0$$

$$[\sqrt{n} - [\sqrt{n}]] = 0 \quad f = g \quad \checkmark$$

$$f(n) = 0$$

$$n \geq 0$$

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

$$n < 0$$

$$n-|n| = n-(-n) = 2n < 0$$

$$D_g = [0, +\infty)$$

برابراند

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

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

$$f(0)g(-1)$$

$$f(0) = 0$$

$$g(-1) = 1$$

$$0 \times 1 = 0$$

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$$\left(\frac{f+g}{f-g}\right)(1)$$

$$f(1) = 2$$

$$g(1) = 1$$

انته

$$\frac{2+1}{2-1} = 3$$

$$\left(\frac{f+g}{f-g}\right)(2)$$

$$f(2) = 3$$

$$g(2) = 3$$

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مخرج تعریف شده

$$3n-1 = -2 \Rightarrow 3n = -1 \quad n = -\frac{1}{3}$$

$$n = -\frac{1}{3}$$

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

انته

$$3n-1 = -1 \Rightarrow 3n = 0 \Rightarrow n = 0$$

$$n = 0$$

$$g(0) = f(-1) = 2$$

$$3n-1 = 0 \Rightarrow 3n = 1 \Rightarrow n = \frac{1}{3}$$

$$n = \frac{1}{3}$$

$$g(\frac{1}{3}) = f(0) = 0$$

$$g(1) = f(2) = 1$$

$$g(\frac{1}{3}) = f(3) = -1$$

$$h(0) = f(0) = 0$$

$$h(2) = f(2) = 1$$

$$h(-2) = f(2) = 1$$

$$h(3) = f(3) = -1$$

$$h(-3) = f(3) = -1$$

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