

۱۴,۷۵

$$f(a) = (a+1)(a+2) = v(a+1) = va + v$$

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

$$2f(a) = f(-2) + a$$

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

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

$$10a = -18$$

$$a = \frac{-18}{10} = \frac{-9}{5}$$

حاصل

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$$\begin{aligned} 2f(n) - 3f(-n) &= 8n^2 - n \xrightarrow{\times 2} \\ 2f(-n) - 3f(n) &= 8n^2 + n \xrightarrow{\times 2} \end{aligned}$$

$$\begin{cases} 2f(n) - 3f(-n) = 16n^2 - 2n \\ 2f(-n) - 3f(n) = 16n^2 + 2n \end{cases}$$

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

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

ع.ع.

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$$n=0 \rightarrow 2f(0) = 3m - 1 \Rightarrow f(0) = \frac{3m-1}{2} \xrightarrow{\times 2} 4f(0) = 6m - 2$$

$$n=-2 \rightarrow 4f(0) = 14 + 2m + 4m - 1 = 13 + 6m$$

$$6m - 2 = 13 + 6m$$

$$8m = 15 \rightarrow m = \frac{15}{8} = \frac{15}{8}$$

$$f(0) = \frac{3m-1}{2} = \frac{3(\frac{15}{8})-1}{2} = \frac{\frac{45}{8}-1}{2} = \frac{\frac{37}{8}}{2} = \frac{37}{16}$$

حاصل

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$$an + b + \frac{a}{n} + b = \frac{3n^2 - 12n + 3}{n} \xrightarrow{n \neq 0} an^2 + bn + a + bn = 3n^2 - 12n + 3$$

$$a = 3$$

$$b = -9$$

$$f(n) = 3n - 9 \xrightarrow{n=-1} -3 - 9 = -12$$

حاصل

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سفرایب یکسان باشد برابر است.

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

$$g(n) = -\sqrt{(1-n)^3} \rightarrow Dg = \mathbb{R}$$

$$(1-n)^3 \geq 0 \rightarrow 1-n \geq 0 \rightarrow n \leq 1 \rightarrow Dg = (-\infty, 1]$$

$Df = Dg \rightarrow f = g$ ضابطه هاینز برابر
هست در راه حل منتهی آخر
مساوی نیست
نوشته

۱۷۶

$$f(n) = n\sqrt{n} \rightarrow Df = [0, +\infty)$$

$$g(n) = \sqrt{n^3} \rightarrow n^3 \geq 0 \rightarrow n \geq 0$$

$$n=2 \rightarrow f(n) = 2\sqrt{2}$$

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

برابرند

$$f(n) = [\sqrt{n} - \lfloor \sqrt{n} \rfloor] \xrightarrow{Df = [0, +\infty)} = \lfloor \sqrt{n} \rfloor - \lfloor \sqrt{n} \rfloor = 0$$

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

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

برابرند

$$f+g = \{(0,2), (1,3), (2,4), (3,5)\}$$

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

$$الف = 3$$

$$ب = \text{تعریف شده}$$

$$g = f(1) = 2 \times 1 = 0$$

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

$$\text{الف} \rightarrow 3n-1=2 \quad n=1$$

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

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

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

$$3n-1=3 \quad n=\frac{4}{3}$$

$$g(n) = \left\{(1,1), (0,2), \left(\frac{1}{3}, \infty\right), \left(-\frac{1}{3}, 2\right), \left(\frac{4}{3}, -1\right)\right\}$$

$$ب \rightarrow |n|=2 \quad n=\pm 2$$

$$|n|=1 \quad n=\pm 1$$

$$|n|=0 \quad n=0$$

$$|n|=2 \quad n=\pm 2$$

$$|n|=3 \quad n=\pm 3$$

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

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

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

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

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

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

اگر $A = \sqrt{2+\sqrt{3}} + \sqrt{2-\sqrt{3}}$ ، داریم:

$$A^2 = 2+\sqrt{3} + 2-\sqrt{3} + 2\sqrt{(2-\sqrt{3})(2+\sqrt{3})} = 4 \rightarrow A = \sqrt{4}$$

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

البته جواب $2(\sqrt{2-\sqrt{3}} + \sqrt{2+\sqrt{3}} + 2)$ هم درست است ولی این جواب زیاده ت

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

$$g(x) = -\sqrt{(1-x)^3} \rightarrow Dg = (1-x)^3 \geq 0 \rightarrow x \leq 1 \rightarrow Dg = (-\infty, 1]$$

(4)

(دامنه ها) شرط اول برقرار است! $Df \subseteq Dg$ ✓

$$g(x) = -\sqrt{(1-x)^3} = -\sqrt{(1-x)^2(1-x)} = -|1-x|\sqrt{1-x} \xrightarrow{x \leq 1} -(1-x)\sqrt{1-x} = (x-1)\sqrt{1-x}$$

$$f(x) = g(x) \rightarrow \boxed{f(x) = g(x)} \quad \text{(ضابطه ها) شرط دوم برقرار است!} \quad \checkmark$$