

$$f(n) = (n-1)\sqrt{1-n} \rightarrow 1-n \geq 0 \rightarrow 1 \geq n$$

$$g(n) = \sqrt{(1-n)^2} \rightarrow (1-n)^2 \geq 0 \rightarrow 1-n \geq 0 \rightarrow 1 \geq n$$

برابرند

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$$f(n) = n\sqrt{n} \rightarrow n \geq 0$$

$$g(n) = \sqrt{n^2} \rightarrow n \geq 0$$

$$\sqrt{n^2 \cdot n} \rightarrow |n|\sqrt{n}$$

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$$f(n) = [\sqrt{n} \cdot \lfloor \sqrt{n} \rfloor] \rightarrow x \geq 0 \rightarrow f(n) = 0$$

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

برابرند

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$$\left(\frac{f+g}{f-g} \right) (1) \rightarrow \left. \begin{array}{l} f(1)=2 \\ g(1)=1 \end{array} \right\} \rightarrow \frac{2+1}{2-1} = 3$$

$$\left(\frac{f+g}{f-g} \right) (2) \rightarrow \left. \begin{array}{l} f(2)=2 \\ g(2)=2 \end{array} \right\} \rightarrow \frac{2+2}{2-2} = \frac{4}{0} \text{ X}$$

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

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$$g(n) = f(n-1) \rightarrow n-1=2 \rightarrow n=3 \rightarrow (3,1) \text{ و } n-1=-1 \rightarrow n=0 \rightarrow (0,0)$$

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$$n-1=0 \rightarrow n=\frac{1}{2} \rightarrow (\frac{1}{2}, 0) \quad n-1=5 \rightarrow n=6 \rightarrow (6, 5)$$

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

$$h(n) = f(|n|) \rightarrow |n|=2 \rightarrow (2,1) \text{ یا } (-2,1) \quad |n|=0 \rightarrow (0,0)$$

$$|n|=-1 \text{ یا } -2 \text{ X} \quad |n|=2 \rightarrow (2,1) \text{ یا } (-2,1) \Rightarrow h(n) = \left\{ (2,1), (-2,1), (0,0), (1,1), (-1,1) \right\}$$

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$$2f(a) = 18a + 12 \quad f(-2) = 6a - 4$$

$$\rightarrow 18a + 12 = 6a - 4 + a \rightarrow 10a = -16 \rightarrow a = -\frac{8}{5}$$

$$f(n) = |n| + \frac{1}{|n|} + 2 \rightarrow 2\sqrt{2} + \frac{1}{2\sqrt{2}} + 2 + 2\sqrt{2} + \frac{1}{2\sqrt{2}} + 2$$

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$$\rightarrow \frac{1}{2\sqrt{2}} \times \frac{2\sqrt{2}}{2\sqrt{2}} = \frac{2\sqrt{2}}{4} \quad \frac{1}{2\sqrt{2}} \times \frac{2\sqrt{2}}{2\sqrt{2}} = \frac{2\sqrt{2}}{4} \rightarrow 2\sqrt{2} + 2\sqrt{2} + 2 + 2\sqrt{2} + 2\sqrt{2} + 2 = 12$$

$$\rightarrow \sqrt{2} \times \sqrt{2} \quad f(n) = 2\sqrt{2} + 2 \quad \sqrt{2-\sqrt{3}} + \sqrt{2+\sqrt{3}} + 2 + \sqrt{2-\sqrt{3}} + \sqrt{2+\sqrt{3}} + 2$$

$$2f(n) - 2f(n) = 8n^2 - 2n \rightarrow 2f(-n) - 2f(n) = 8n^2 + 2n$$

$$\Rightarrow 4f(n) - 4f(n) = 16n^2 - 4n$$

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

$$-8f(n) = 16n^2 + 2n \rightarrow f(n) = -\frac{8n^2 + 2n}{8}$$

$$\text{if } n=0 \rightarrow (0+2)f(0) - 2(0)f(2) = 8(0)^2 - 2(0) \Rightarrow 2f(0) = 0 \Rightarrow f(0) = 0$$

$$\text{if } n=-2 \rightarrow (-2+2)f(-2) - 2(-2)f(0) = 8(-2)^2 - 2(-2) \rightarrow 4f(0) = 32 + 4 \Rightarrow f(0) = 9$$

$$\rightarrow -16m + 4 = -10f(0)$$

$$16m + 4 = 10f(0)$$

$$40 = 10f(0) \rightarrow f(0) = \frac{40}{10} = 4$$

$$\text{if } n=-1 \rightarrow f(-1) + f\left(\frac{1}{-1}\right) = 2(-1)^2 - 12(-1) + 2$$

$$\rightarrow 2f(-1) = -16 \rightarrow f(-1) = -8$$

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

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

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

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

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

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