

۱۴ مرتب و تغییرات تابع

(بازخورد)

[آب رسی]

$$f(x) = \begin{cases} (a+1) \cdot (x+2) & x > 1 \\ 3a + 2x & x \leq 1 \end{cases}$$

$$5 \geq a - 1$$

$$f(0) = f(-1) + a$$

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

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

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

$$f(0) = ?$$

$$-2\sqrt{3}$$

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

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

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

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

$$f(0) = ? \quad (x+2)f(x) - (x-2)f(x+2) = x^2 - mx + m - 1$$

$$2f(0) = 3m - 1$$

$$x=2 \Rightarrow 4f(0) = 10 + 2m \Rightarrow 4f(0) - 2f(0) = 2$$

$$10 + 2m - 3m + 1 = 2 \Rightarrow m = 9$$

$$m = \frac{9}{2}$$

$$f(x) = ?$$

$$f(x) = \frac{3(\frac{9}{2}) - 1}{2} = \frac{13.5 - 1}{2} = \frac{12.5}{2} = 6.25$$

Subject:
 Date: / /

Month: / /

دانشگاه آزاد

مقطع

مقطع

دانشگاه آزاد

$$f(x) = \left[\sqrt{x} - \lfloor \sqrt{x} \rfloor \right] \quad x \geq 0$$

(2, 2) $\rightarrow 2, 2 - 2 = [0, 2]$

$$g(x) = \sqrt{x - |x|} \quad (1-1) \rightarrow \sqrt{x - x} = 0$$

این عبارت را برای $x \geq 0$ و $x < 0$ بررسی می‌کنیم

$$f: \{(-1, 2), (2, 3), (3, 1), (0, 2), (\sqrt{2}, 1)\}$$

$$g: \{(-1, 1), (1, 1), (2, 3), (3, 5), (0, 2), (\sqrt{2}, 1)\}$$

$$\left(\frac{f+g}{f-g} \right)(1) = \frac{2+1}{2-1} = 3 \quad \left(\frac{f+g}{f-g} \right)(2) = \frac{3+3}{3-1} = 3$$

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

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

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

$$h(x) = f(|x|) = \{(-1, 2), (1, 2), (2, 3), (3, 1), (0, 2), (\sqrt{2}, 1)\}$$

من خیلی خوشم نیامد!

$$x_n - 1 = 0 \rightarrow x = \frac{1}{n}$$

$$x_n - 1 = -2 \rightarrow x = -\frac{1}{n}$$

$$x_n - 1 = 3 \rightarrow x = \frac{4}{n}$$

1. $y = ax + b$

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

$$f(-1) + f(-1)^2 + f(-1)^3 - 1 \rightarrow f(-1)^2 - 1$$

$$\left(\frac{1}{a}\right) \cdot f(q(z)) \cdot (a \cdot x + b + a_1 x + b_1 z) \cdot \frac{f(a \cdot x + b)}{f(a \cdot x + b_1 z)}$$

1111

$$f(x) = \sqrt{x(x-1)} \quad 0 \leq x \leq 1$$

$$g(q) = -q \sqrt{(1-q)^2 - (1-q)q(1-q)} \quad \text{and} \quad h(q) = 1 - q$$

$$g(x) = (1-x)\sqrt{1-x^2} - 1 \rightarrow x \leq 1$$

$$f(1) = 2099(1) = 20$$

$$f(x) = x \sqrt{x} \quad \begin{matrix} \text{m/s} \\ x \geq 0 \end{matrix}$$

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

1-3-1-2

$$f(1) > 1 \vee f(1) = 2, \text{ ~~f(1) = 1~~ } f(1) = 2 \checkmark$$

[illegible]

$$f(n) = \begin{cases} (a+1)(n+2) & ; n > 1 \\ 3a + 2n & ; n \leq 1 \end{cases}$$

$$2f(1) = f(-1) + a$$

$\downarrow$ ضرایب $\downarrow$ ضرایب
 ضرایب $\downarrow$ ضرایب

(1)

$$2[(a+1)(1+2)] = 3a + 2(-1) + a \rightarrow 14a + 14 = 4a - 2 \rightarrow 10a = -16 \rightarrow \boxed{a = -1.6}$$

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

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

(2)

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

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

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

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 تریه

$$2f(n) - 3f(-n) = 4n^2 - n \xrightarrow{\times 2} 4f(n) - 6f(-n) = 8n^2 - 2n$$

(3)

$$2f(-n) - 3f(n) = 4(-n)^2 + n \xrightarrow{\times 3} 6f(-n) - 9f(n) = 12n^2 + 3n$$

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

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

$$x=-2 \quad 4f(0) = 4(-2)^2 + 2m + 3m-1 \rightarrow f(0) = \frac{5m+15}{4}$$

$$\frac{5m+15}{4} = \frac{3m-1}{2} \rightarrow 5m+15 = 2m-2 \rightarrow 3m = -17 \rightarrow m = -\frac{17}{3} \in \mathbb{Z}, 5$$

$$f(0) = \frac{3m-1}{2} \in \mathbb{Z} \quad \frac{15+5m}{4} \rightarrow f(0) = \frac{3(-\frac{17}{3})-1}{2} = \boxed{-4, 25 \in \mathbb{Z}}$$

۱۰- الف) یک اگرمسازیم و طبق آن n های زیرین به f آن ها امرند.

$$3n-1=t \rightarrow n = \frac{t+1}{3} \quad f(3n-1) = \left\{ \left(\frac{t+1}{3}, 1 \right) \left(\frac{-1+t}{3}, 4 \right) \left(\frac{1+t}{3}, 5 \right) \left(\frac{-2+t}{3}, 2 \right) \left(\frac{t+1}{3}, -1 \right) \right\}$$

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