

حل المسألة

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

سؤال 1

و

$$\rightarrow \frac{1}{a+1} \rightarrow \frac{1}{a+1} + \frac{1}{a-1} = \frac{1}{a-1}$$

1, 2, 3

$$(a+1)(a-1) = (a+1)(a-1) = \frac{1}{a+1}$$

صورت سؤال راجع لفوتو 1

$$(1/a+1) + (1/a-1) = a$$

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

$$1/a = -1$$

$$a = -\frac{1}{1}$$

$$1/a + 1/a = 1/a - 1/a + a \rightarrow 1/a = -1/a \rightarrow a = -1/a$$

سؤال 1

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

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

الحل كامل مشروط بغير فوتو 1

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

$$\frac{1 + \sqrt{2}}{\sqrt{1 + \sqrt{2}}}$$

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

$$\frac{1}{1 + \sqrt{2}} = 1 - \sqrt{2}, \quad \frac{1}{1 - \sqrt{2}} = 1 + \sqrt{2} \quad X$$

بالتحليل حل المسألة!

دفتر الامتحانات

سوال (۳)

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

$$2f(-x) - 3f(x) = 1(-x)^2 - (-x) = x^2 + x$$

$$4f(x) - 4f(-x) = 12x^2 - 2x$$

$$-4f(x) + 4f(-x) = 12x^2 + 2x$$

$$-8f(x) = 10x^2 + x \rightarrow f(x) = \frac{10x^2 + x}{-8} = \left(-\frac{5}{4}x^2 - \frac{1}{8}x \right)$$

$$f(x+1) \text{ فاندركا ليد}$$

(۴)

$$[(x+1) - 3x]f(x+1) = (x^2 - mx + 1)^m$$

$$\hookrightarrow x = -1$$

$$(-1(-1) + 1)f(0) = f(-1)^2 - m(-1) + 1^m m - 1$$

$$(1+1)f(0) = 1 + 2m + 1^m m - 1$$

$$4f(0) = 2m + 1 \rightarrow f(0) = \frac{2m+1}{4}$$

$$x=0 \quad 4f(0) = 2m-1 \rightarrow f(0) = \frac{2m-1}{4}$$

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

$$\frac{2m+1}{4} = \frac{2m-1}{4} \rightarrow 1m+1 = 1m-1 \rightarrow 1m = 2 \rightarrow m = \frac{2}{1} = 2$$

$$f(0) = \frac{2m-1}{4} = \frac{1+2m}{4} \rightarrow f(0) = \frac{3(2,2)-1}{4} = \frac{4,2-1}{2} = \frac{3}{2}$$

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

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

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

$$3x^2 - 12x + 13$$

$$a = 3: x^2 \text{ صریح}$$

$$b = -12: x \text{ ضریب}$$

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

$$f(-1) = 3(-1) - 4 = -3 - 4 = -7$$

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

سوال (4)

$$1-x > 0 \rightarrow x < 1 \rightarrow D_f = (-\infty, 1]$$

$$(1-x)^2 > 0 \rightarrow 1-x > 0 \rightarrow x < 1 \rightarrow D_g = (-\infty, 1)$$

داده ما لبر

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

ریشه ضابطه:

$$\sqrt{(1-x)^2} = |1-x|$$

$$\frac{1}{x} \rightarrow x < 1$$

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

در تابع ~~نام~~ مساوی اند

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

(سوال ۷)

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

دایره مار

$$g(x) = \sqrt{x^2 \cdot x} = \sqrt{x^2} \cdot \sqrt{x} = |x| \sqrt{x} \quad x \geq 0$$

$$|x| = x$$

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

در تابع هم صدای اند

$$x - |x| \geq 0 \rightarrow x \geq |x| \quad x \geq 0$$

(سوال ۸)

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

دایره مار

$$x \geq 0$$

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

دایره مار

$$x \geq 0 \quad |x| = x$$

برای مثال

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

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

کسی که می برد

همه دستار

در تابع هرگز



Senobar

سوال ۹

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

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

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

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

$$= \frac{3+3}{3-3} = \frac{6}{0} = \text{تعریف نشده}$$

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

۲

$$(f \cdot g)(-1)$$

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

۱- در دافنر و حضور زاررس تعریف شده

$$0 \times 1 = 0$$

$$g(x) = f(3x-1)$$

سوال ۱۰

$$3x-1=3$$

$$3x-1=2$$

$$3x-1=1$$

$$3x-1=0$$

$$3x-1=-1$$

$$3x-1=-2$$

$$3x-1=3$$

$$3x-1=2$$

$$3x-1=1$$

$$3x-1=0$$

$$3x-1=-1$$

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$$3x-1=1$$

$$3x-1=0$$

$$3x-1=-1$$

$$3x-1=-2$$

$$h(x) = f(1/x)$$

$$x = -3 \leq |x| \leq 3 \rightarrow x = 3$$

$$x = -2 \leq |x| \leq 2 \rightarrow x = 2$$

$$|x| = -1$$

$$|x| = 0$$

$$|x| = -2$$

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

$$(3, -1)$$

$$(2, -1)$$

$$(1, 0)$$

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

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

$\downarrow$ ضرایب $\downarrow$ ضرایب
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(1)

$$2[(a+1)(a+2)] = 3a + 2(-2) + a \rightarrow 4a + 4 = 4a - 4 \rightarrow 4a = -8 \rightarrow \boxed{a = -2}$$

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

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

(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 ت