

آزمایش ۱۹، ۱۵

نیما خفقی

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

$$\Rightarrow 2 \times \forall a(a+1) = 2a - 2 \Rightarrow 2a + 2 = 2a - 2 \Rightarrow 4 = 0 \Rightarrow \text{اگر } a = -1 \Rightarrow a = -1$$

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

$$(2-\sqrt{3})(2+\sqrt{3}) = 1 \Rightarrow \text{در عبارت معکوس اینی و مقادیر 4 را جایگزین برابر 1}$$

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

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

$$= \frac{\sqrt{4+1}}{\sqrt{2}} + \frac{\sqrt{4-1}}{\sqrt{2}} = \frac{2\sqrt{2}}{\sqrt{2}} = \sqrt{2} + 2$$

$$2(\sqrt{2}+2) = 4 + 2\sqrt{2}$$

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

$$(2f(-x) - 3f(x)) = 4x^2 + x \times \frac{1}{x}$$

$$\Rightarrow f(x) = -4x^2 + \frac{1}{9}x$$

$$\Rightarrow \left. \begin{aligned} 2f(x) - 3f(-x) &= 4x^2 - x \\ -2f(x) + 3f(x) &= 4x^2 + x \end{aligned} \right\} \text{ع.} \Rightarrow -2/5 f(x) = 10x^2 + \frac{1}{5}x$$

$$\begin{aligned} x=2 &\rightarrow 2f(0) = 12 + 2m + 3m - 1 \\ x=0 &\rightarrow (2f(0) = 3m - 1) \times 3 \end{aligned}$$

$$\begin{aligned} 4m - 2 &= 9m + 12 \Rightarrow m = 4/5 \Rightarrow 2f(0) = 3m - 1 \\ &\Rightarrow f(0) = \frac{3m-1}{2} = \frac{12/5-1}{2} = 4/10 \end{aligned}$$

$$f(x) + f\left(\frac{1}{x}\right) = -3x + \frac{1}{x} - 12$$

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

$$\frac{a}{x} + ax + b = -3x + \frac{1}{x} - 12 \Rightarrow a = 3, b = -12$$

$$\Rightarrow f(x) = 3x - 12 \Rightarrow f(-1) = -3 - 12 = -15$$

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

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

در نقطه

$$f(0) = -1 \times \sqrt{1} = -1$$

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

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

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

در تمام نقاط برابرند

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

$$D_f = \mathbb{R}^+$$

در نقطه

$$f(3) = 3\sqrt{3} = \sqrt{27}$$

$$g(x) = \sqrt{x^3}$$

$$D_g = \mathbb{R}^+$$

$$g(3) = \sqrt{27}$$

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

$$D_f = \mathbb{R}^+$$

در نقطه

$$f(2) = [\sqrt{2} - \sqrt{2}] = 0$$

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

$$D_g = \mathbb{R}^+$$

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

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

$$\left(\frac{f+g}{f-g}\right)(2) = \frac{3+3}{3-3} = \frac{6}{0} \Rightarrow \text{تعریف نشده}$$

$$ج) f(0)g(-1) = 0 \times g(-1) = 0$$

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

$$ب) f(1/x) \Rightarrow \left\{ (2,1), (-2,1), (0,0), \left(\frac{1}{2},1\right), \left(-\frac{1}{2},-1\right) \right\}$$

$$x = -1 \rightarrow f(-1) + f(-1) = \frac{3(-1)^2 + 12 + 3}{-1} = -18 \rightarrow \boxed{f(-1) = -9} \quad (\omega)$$

التي صرنا نستخدمها في رابطة $f(x) = ax + b$ فرضنا

$$f(x) + f\left(\frac{1}{x}\right) = ax + b + \frac{a}{x} + b = \frac{ax^2 + bx + a + bx}{x} = \frac{3x^2 - 12x + 3}{x} \quad \begin{cases} a = 3 \\ b = -4 \end{cases}$$

$$f(x) = 3x - 4 \rightarrow \boxed{f(-1) = -9}$$