

$$f(x) = (a+1)(x+2) \rightarrow x > 1$$

$$f(x) = (a+1)(x) = \sqrt{a+1}$$

$$f(-2) = 3a+2x \rightarrow x \leq 1$$

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

$$2f(x) = f(-2) \rightarrow a$$

$$18a+18 = 3a-2 \rightarrow a$$

$$a = \frac{-18}{1} = -18$$

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

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

$$2-3=1 \rightarrow \frac{2-\sqrt{3}}{2} = \frac{1}{2+\sqrt{3}} \left\{ \begin{array}{l} \frac{1}{2} = \sqrt{2-\sqrt{3}} \\ \frac{1}{2} = \sqrt{2+\sqrt{3}} \end{array} \right.$$

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

$$\left(\frac{1}{2} + 2\right)^2 = \frac{1}{2} + 2 + 2 \rightarrow 2 \rightarrow 2 + \frac{1}{2} = \sqrt{4}$$

$$f(2-\sqrt{3}) + f(2+\sqrt{3}) = \sqrt{2-\sqrt{3}} + \frac{1}{\sqrt{2-\sqrt{3}}} + 2 + \sqrt{2+\sqrt{3}} + \frac{1}{\sqrt{2+\sqrt{3}}} + 2 = 2\sqrt{4} + 2$$

$$\left\{ \begin{array}{l} 2f(x) - 3f(-x) = 4x - x \\ 2f(-x) - 3f(x) = 2x^2 + x \end{array} \right. \rightarrow \left\{ \begin{array}{l} 4f(x) - 6f(-x) = 3x^2 - 2x \\ 6f(-x) - 9f(x) = 12x^2 + 3x \end{array} \right.$$

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

$$f(x) = -\frac{2}{5}x^2 - \frac{1}{5}x$$

$$(x+2)f(x) - 3xf(x+2) = 4x^2 - mx + 3m - 1$$

$$\begin{aligned} x=0 & \rightarrow 2f(0) = 3m-1 \rightarrow f(0) = \frac{3m-1}{2} \quad (1) \\ x=-2 & \rightarrow 9f(-2) = 4m+1 \rightarrow f(-2) = \frac{4m+1}{9} \quad (2) \end{aligned} \quad \begin{aligned} \frac{(3m-1)}{2} &= \frac{4m+1}{9} \times 4 \\ m &= 18 \\ m &= \frac{18}{9} = 2 \end{aligned}$$

$$f(0) = \frac{3 \times 2 - 1}{2} = \frac{5}{2}$$

$$ax+b+\frac{a}{x}+b = \frac{3x^2-12x+3}{x} \rightarrow \frac{2bx+a+ax^2}{x} = \frac{3x^2-12x+3}{x}$$

$$a=3$$

$$2b=-12 \rightarrow b=-6$$

$$f(x) = 3x-6 \rightarrow f(-1) = -9$$

$\begin{cases} f(x) = (x-1)\sqrt{1-x} \rightarrow D_f = (-\infty, 1] \\ g(x) = -\sqrt{(1-x)^3} \rightarrow D_g = (-\infty, 1] \end{cases} \quad D_f = D_g$ $f(-1) = -9$ $g(-1) = -9$ برابر	۶
$\begin{cases} f(x) = x\sqrt{x} \\ g(x) = \sqrt{x^3} \end{cases} \rightarrow D_f = D_g$ با عدد گداری برای هر دو تابع توابع برابر	۷
$\begin{cases} f(x) = [\sqrt{x} - \lfloor \sqrt{x} \rfloor] \xrightarrow{x=9} \sqrt{9} - [\sqrt{9}] = 0 \rightarrow f(x)=0 \\ g(x) = \sqrt{x-1} \xrightarrow{x=9} \sqrt{9-1} = \sqrt{8} \neq 0 \end{cases}$ $\sqrt{x-1} = x \rightarrow \sqrt{x-x} = 0$ و $\sqrt{x+x} = \sqrt{2x}$ غلط $D_f = D_g \rightarrow$ ظاهرها برابرند $\rightarrow$ برابرند	۸
الف) $\frac{f(1) + g(1)}{f(1) - g(1)} = \frac{1+1}{1-1} = \frac{2}{0}$ ب) $\frac{f(2) + g(2)}{f(2) - g(2)} = \frac{2+2}{2-2} = \frac{4}{0}$ و ج) $f(-1) \cdot g(-1) = 0 \times 1 = 0$	۹
$g(x) = f(x-1) \quad \begin{cases} 3x-1=2 \rightarrow x=1 \\ 3x-1=0 \rightarrow x=\frac{1}{3} \\ 3x-1=-1 \rightarrow x=0 \\ 3x-1=-2 \rightarrow x=-\frac{1}{3} \\ 3x-1=3 \rightarrow x=\frac{4}{3} \end{cases} \rightarrow \left(1, \frac{1}{3}, 0, -\frac{1}{3}, \frac{4}{3}\right)$ $g(x) = f(x) \quad \begin{cases} x =2 \rightarrow x=\pm 2 \\ x =3 \rightarrow x=\pm 3 \\ x =4 \rightarrow x=\pm 4 \end{cases} \rightarrow \left(-2, 2, -3, 3, -4, 4\right)$	۱۰