

۱۹، ۱۷۵ آینه

$$f(x) = \begin{cases} (a+1)(x+1) & x \geq 1 \\ ra + rx & x \leq 1 \end{cases}$$

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

$$f(a+1) \times v = ra - r + a$$

$$1 \times a + 1 \times r = ra - r$$

$$10a = -10 \rightarrow a = -1 \quad \text{پ}$$

$$f(x) = \frac{A}{\sqrt{x}} + \frac{1}{\sqrt{x}} + r \quad f(r-\sqrt{r}) + f(r+\sqrt{r}) = ? \quad - 2$$

$$A^2 = x + \frac{1}{x} + r \quad \xrightarrow{x=r-\sqrt{r}} \quad r + \sqrt{r} + r - \sqrt{r} + r = 4 \rightarrow A = \sqrt{4}$$

$$\xrightarrow{x=r+\sqrt{r}} \quad r + \sqrt{r} + r + \sqrt{r} + r = 4 \rightarrow A = \sqrt{4}$$

$$f(x) = A + r$$

$$f(r-\sqrt{r}) + f(r+\sqrt{r}) = \sqrt{4} + r + \sqrt{4} + r = 2\sqrt{4} + 2 \quad \text{پ}$$

$$\begin{aligned} 2f(x) - 2f(-x) &= 2x^2 - x \\ 2f(-x) - 2f(x) &= 2x^2 + x \end{aligned} \quad \text{پ}$$

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

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

$$-4f(x) = 20x^2 + x$$

$$f(x) = -5x^2 - \frac{x}{4} \quad \text{پ}$$

s.a.m

$$(x+r)f(x) - rx f(x+r) = rx^r - mx + rm - 1$$

$$x=0$$

$$x=-r$$

$$f(0)=?$$

$$rf(0) = rm - 1$$

$$rf(0) = 14 + 20m - 1$$

$$\rightarrow rf(0) = 9m - r$$

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$$14 + 20m - 1 = 9m - r$$

$$14 = 9m \rightarrow m = \frac{14}{9} \quad f(0) = \frac{r(\frac{14}{9}) - 1}{r} = \frac{r \cdot 14}{9r} = \frac{14}{9}$$

$$f(0) = \frac{r}{r} m - \frac{1}{r} \rightarrow f(0) = \frac{r}{r} \times \frac{14}{9} - \frac{1}{r} = \frac{14}{9} - \frac{1}{r} = \frac{14r - 9}{9r}$$

$$f(x) + f\left(\frac{1}{x}\right) = \frac{rx^r - 14x + r}{x} \quad f(-1) = ?$$

$$rf(-1) = \frac{r + 14 + r}{-1} \rightarrow rf(-1) = -14 \rightarrow f(-1) = -9$$

$$a(x) + b + a\left(\frac{1}{x}\right) + b = rx - 14 + r\left(\frac{1}{x}\right) \rightarrow a = r \quad y = rx - 4 \quad y = -r - 4 = -9$$

$$\begin{cases} f(x) = (x-1)\sqrt{1-x} & x \leq 1 & (-\infty, 1] & f(x) = -r\sqrt{x} \\ g(x) = -\sqrt{(1-x)r} & x \leq 1 & (-\infty, 1] & f(x) = -r\sqrt{x} \end{cases}$$

$$f(x) = x\sqrt{x} \quad D_f = [0, +\infty) \quad f(x) = r\sqrt{x}$$

$$g(x) = \sqrt{x^r} \quad x^r \geq 0 \rightarrow x \geq 0 \quad f(x) = r\sqrt{x} = r\sqrt{x} \quad \checkmark$$

$$F(x) = \left[\sqrt{x} - \left[\sqrt{x} \right] \right] = 0$$

$$g(x) = \sqrt{x-m} \quad x < 0 \rightarrow x \text{ غير معرف} \quad x \geq 0 \rightarrow 0$$

$$\text{د) } \frac{f(1) + g(1)}{f(1) - g(1)} = \frac{2 + 1}{2 - 1} = 3$$

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$$\text{ب) } \frac{f(2) + g(2)}{f(2) - g(2)} = \frac{2 + 2}{2 - 2} \rightarrow \text{تعريف نشده}$$

$$\text{ج) } f(0) \times g(-1) = 0$$

$$\text{د) } g(x) = \left\{ (1, 1), (0, 4), \left(\frac{1}{2}, 4\right), \left(-\frac{1}{2}, 2\right), \left(\frac{2}{3}, -1\right) \right\}$$

دو نقطه اول $x = 1$ و $x = 0$

$$\text{ب) } h(x) = f(x) \quad \begin{array}{l} -\frac{5}{2} < x < \frac{5}{2} \\ |x| < \frac{5}{2} \\ |x| = \frac{5}{2} \\ \pm \frac{5}{2} \end{array} \quad \begin{array}{l} |x| \neq -1 \\ |x| = 0 \\ |x| \neq -5 \end{array}$$

$$h(x) = \left\{ (2, 1), (-2, 1), (0, 4), \left(\frac{1}{2}, -1\right), \left(-\frac{5}{2}, -1\right) \right\}$$

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

(14)

$$x = -2 \quad 4f(x) = 4(-2)^2 + 2x + 2x_{m-1} \rightarrow f(x) = \frac{16 + 2x + 2x_{m-1}}{4}$$

$$\frac{16 + 2x + 2x_{m-1}}{4} = \frac{2x_{m-1}}{2} \rightarrow 16 + 2x + 2x_{m-1} = 4x_{m-1} \rightarrow 16 + 2x = 2x_{m-1} \rightarrow x_{m-1} = \frac{16 + 2x}{2} = 8 + x$$

$$f(x) = \frac{2x_{m-1}}{2} = \frac{16 + 2x}{2} \rightarrow f(x) = \frac{2(8 + x)}{2} = \boxed{8 + x}$$