

تکلیف 4

ب. دهم

م. س. س.

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

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

(1)

$$f(a) = (a+1)(v) = va + v \quad xf(a) = 14a + 14 \quad \Rightarrow 14a + 14 = 2a - 4 + a$$

$$f(-x) \xrightarrow{x \leq 1} xa - x \quad 10a = -18 \quad a = -1.8$$

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

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

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

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

خط حل درست آخر تکلیف

$$(xf(x) - xf(-x)) = f(x^2 - x) \quad (xf(-x) - xf(x)) = f(x^2 + x)$$

(2)

$$xf(x) - xf(-x) = f(x^2 - x) \quad xf(-x) - xf(x) = f(x^2 + x)$$

$$\begin{cases} -2f(x) = 20x^2 + x \Rightarrow f(x) = -x^2 - \frac{x}{2} \end{cases}$$

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

(3)

$$xf(0) = 2^{m-1} \quad f(0) = \frac{2^{m-1}}{2}$$

$$f(0) = \frac{2^0}{1} = \frac{2}{2} = 1$$

$$f(0) = \frac{2^0}{1} = \frac{2}{2} = 1$$

$$x=2 \rightarrow (0)f(0) + 4f(0) = 14 + 2m + (m-1)$$

$$-14f(0) = -14m - 14$$

$$+14f(0) = +14$$

$$4f(0) = 2m + 14$$

$$f(x) + f\left(\frac{1}{x}\right) = \frac{2x^2 - 12x + 5}{x} \quad x=-1 \rightarrow xf(-1) = -18 \rightarrow f(-1) = -9$$

(4)

$$f(x) = (x-1)\sqrt{1-x} \quad Df = (-\infty; 1] \quad x=0 \rightarrow f(0) = -1$$

(5)

$$g(x) = -\sqrt{(1-x)^3} \quad Dg = (-\infty; 1] \quad f(0) = -1$$

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

$$x=1 \rightarrow f(1) = 0$$

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

$$g(1) = 0$$

$$\begin{cases} f(x) = x\sqrt{x} & Df = [0, +\infty) \\ g(x) = \sqrt{x} & Dg = [0, +\infty) \end{cases} \xrightarrow{x=0} \begin{matrix} f(0) = 0 \\ g(0) = 0 \end{matrix} \quad \begin{matrix} x=y \\ f(x) = x\sqrt{x} \\ g(x) = \sqrt{x} \end{matrix} \quad (V)$$

$$\begin{cases} f(x) = [\sqrt{x} - \sqrt{x}] & Df = [0, +\infty) \\ g(x) = \sqrt{x-1} & Dg = [0, +\infty) \end{cases} \quad \begin{matrix} f(\frac{1}{x}) = [\sqrt{\frac{1}{x}} - \sqrt{\frac{1}{x}}] = 0 \\ g(\frac{1}{x}) = 0 \end{matrix} \quad (A)$$

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

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

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

$$\text{ب) } \left(\frac{f+g}{f-g} \right)(x) = \frac{4}{0} \rightarrow \text{تعريف نشده}$$

$$\text{ج) } f(0)g(-1) = 0 \times 1 = 0$$

$$f(x) = \{(x, 1), (-1, 4), (0, 5), (-x, x), (x, -1)\}$$

$$\text{الف) } g(x) = f(2x-1) \quad \begin{matrix} 2x-1=2 & x=1 \\ 2x-1=-1 & x=0 \\ 2x-1=0 & x=\frac{1}{2} \end{matrix} \quad \begin{matrix} 2x-1=-2 & x=-\frac{1}{2} \\ 2x-1=2 & x=\frac{3}{2} \end{matrix}$$

$$\rightarrow g(x) = \{(1, 1), (0, 4), (\frac{1}{2}, 5), (-\frac{1}{2}, 2), (\frac{3}{2}, -1)\}$$

$$\text{ب) } h(x) = f(|x|)$$

$$h(x) = \{(x, 1), (x, 1), (0, 5), (-x, x), (x, -1)\}$$

$$f(x) = \sqrt{x} + \frac{1}{\sqrt{x}} + 2 \quad A^2 = x + \sqrt{x} + 2 - \sqrt{x} + 2\sqrt{x} - 2 \rightarrow A = \pm\sqrt{4} \quad (2)$$

$$-\sqrt{4} \rightarrow \text{منفی}$$

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

$$2A + 2 = 2\sqrt{4} + 2 \quad \sqrt{x-x} = 1 \rightarrow \text{مخرج مشترک}$$