

$$f(x) = \begin{cases} (a+1)(x+2) & x > 1 \\ 3a+2x & x \leq 1 \end{cases} \quad \begin{aligned} & 2f(0) = f(-2) + a \quad a = ? \\ & 2(a+1)(1) = 3a - \varepsilon + a \end{aligned} \quad \text{سوال ۱}$$

$$2a = -1 \rightarrow a = -\frac{1}{2}$$

$$f(x) = \sqrt{x} + \frac{1}{\sqrt{x}} \quad x > 0 \quad f(2\sqrt{x}) - f(2+\sqrt{x}) = 0 \quad \text{سوال ۲}$$

$$2f(2+\sqrt{x}) = 2(\sqrt{4+x}) = \boxed{\varepsilon + 2\sqrt{4}}$$

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

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

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

$$\sqrt{x} + \frac{1}{\sqrt{x}} = \sqrt{4} \rightarrow f(2\sqrt{x}) = \sqrt{4} + 2$$

$$f(2-\sqrt{x}) = \sqrt{4} + 2$$

$$2f(x) - 2f(-x) = \varepsilon x^2 \quad x^2$$

$$x \rightarrow -x \quad 2f(-x) - 2f(x) = \varepsilon x^2 \quad x^2$$

$$\begin{aligned} \varepsilon f(x) - 4f(-x) &= 1 \cdot x^2 - 2x \\ + 4f(x) - 4f(-x) &= 1 \cdot x^2 + 2x \Rightarrow -\varepsilon f(x) = 2 \cdot x^2 + 2x \end{aligned}$$

$$f(x) = -\varepsilon x^2 \quad x$$

$$(x+2)f(x) - 2xf(x+2) = \varepsilon x^2 - mx + 3m-1 \quad f(0) = ? \quad \text{سوال ۳}$$

$$x=0 \rightarrow 2f(0) = 3m-1 \quad x=-2 \rightarrow 4f(0) = 14 + 2m + 3m-1 \quad f(0) = \frac{5m+10}{4}$$

$$\frac{5m+10}{4} = \frac{3m-1}{4} \Rightarrow 5m+10 = 3m-1 \Rightarrow m = -\frac{11}{2}$$

$$f(0) = 3 \times \left(\frac{9}{4}\right) - 1 = \frac{25}{4}$$

$$a + b + a \frac{1}{a} + b = 3a - 12 + 3 \frac{1}{a} \rightarrow a = 3$$

مسئله (4)

$$2b = -12 \rightarrow b = -4$$

$$f(-1) = -a + b \rightarrow -3 - 4 = -7$$

پ

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

$$Df: 1-x \geq 0 \rightarrow x \leq 1$$

دستهای برابر

مسئله (4)

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

$$Dg: (1-x)^3 \geq 0 \rightarrow x \leq 1$$

$$\left. \begin{array}{l} f = g \end{array} \right\}$$

$$f(x) = -(1-x)\sqrt{1-x} \rightarrow -(1-x)^{\frac{3}{2}}$$

$$Df: (1-x)^{\frac{3}{2}} \geq 0 \rightarrow x \leq 1$$

دستهای برابر

$$g(x) = -\sqrt{(1-x)^3} \rightarrow -(1-x)^{\frac{3}{2}}$$

$$Dg: (1-x)^{\frac{3}{2}} \geq 0 \rightarrow x \leq 1$$

دستهای برابر

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

$$Df: x \geq 0$$

دستهای برابر

مسئله (4)

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

$$Dg: x \geq 0$$

دستهای برابر

$$\left. \begin{array}{l} f = g \end{array} \right\}$$

$$f(x) = x\sqrt{x} \rightarrow x^{\frac{3}{2}}$$

$$Df: x^{\frac{3}{2}} \geq 0 \rightarrow x \geq 0$$

دستهای برابر

$$g(x) = \sqrt{x^3} \rightarrow x^{\frac{3}{2}}$$

$$Dg: x^{\frac{3}{2}} \geq 0 \rightarrow x \geq 0$$

دستهای برابر

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

$$0 < x < 1 \rightarrow 0 < \sqrt{x} - \lfloor \sqrt{x} \rfloor < 1$$

مسئله (4)

$$f(x) = 0 \text{ است}$$

$$[\sqrt{x} - \lfloor \sqrt{x} \rfloor] = 0$$

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

$$x - 1|x| \geq 0 \rightarrow x \geq 0$$

پ

$$g(x) = 0 \text{ است}$$

$$f(x) = g(x)$$

$$\left( \frac{f+g}{f-g} \right)(1) = Df \cap Dg = \{1, 2, 3, 0\} - (f-g) = 0$$

مسئله (4)

$$f+g = (1, 2), (2, 4), (3, 6), (0, 0)$$

$$f-g = (1, 1), (2, -2), (3, -3), (0, 0)$$

$$\left( \frac{f+g}{f-g} \right)(1) \rightarrow (1, 2)$$

پ

s.a.m

Subject:

Date:

$$1.) \left( \frac{f+g}{f-g} \right)(x) = \frac{f(x) + g(x)}{f(x) - g(x)} = \frac{x+3}{x-3} = \frac{4}{0} \rightarrow \text{تعريف نسبه}$$

$$2.) f(0) \times g(-1) = 0 \times 1 = 0$$

سوال ٥٠

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

$$3x-1 = 2 \rightarrow x=1 \rightarrow g(1) = f(2) = 1 / 3x-1 = -1 \rightarrow x=0 \rightarrow g(0) = f(-1) = 4$$

$$3x-1 = 0 \rightarrow x = \frac{1}{3} \rightarrow g\left(\frac{1}{3}\right) = 5 / 3x-1 = -2 \rightarrow x = -\frac{1}{3} \rightarrow g\left(-\frac{1}{3}\right) = f(-2) = 2$$

$$3x-1 = 3 \rightarrow x = \frac{4}{3} \rightarrow g\left(\frac{4}{3}\right) = f(3) = -1$$

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

$$1.) h(x) = f(|x|) \quad \text{تبدیل متغیر} \rightarrow (0, 2, 3)$$

$$\begin{aligned} |x| = 0 &\rightarrow x=0 \quad h(0) = f(0) = 5 \\ |x| = 2 &\rightarrow x=2 \quad h(2) = f(2) = 1 \\ &\rightarrow x=-2 \quad h(-2) = f(2) = 1 \\ |x| = 3 &\rightarrow x=3 \quad h(3) = f(3) = -1 \\ &\rightarrow x=-3 \quad h(-3) = f(3) = -1 \end{aligned} \quad \left. \begin{array}{l} \\ \\ \\ \end{array} \right\} h(x) = \{(0,5), (2,1), (-2,1), (3,-1), (-3,-1)\}$$