

$$f(x) = \begin{cases} (a+1)(x+r) & x > 1 \\ 3a+2x & x \leq 1 \end{cases} \quad \text{سؤال ١} \quad \begin{aligned} & r f(0) = f(-r) + a \quad a = ? \\ & r(a+1)(r) = 3a - \varepsilon + a \end{aligned}$$

$$10a = -11 \rightarrow a = -1.1$$

$$f(x) = \sqrt{x} + \frac{1}{\sqrt{x}} + r \quad f(r, \sqrt{r}) (f(r, \sqrt{r})) = ? \quad \text{سؤال ٢}$$

$$r f(r, \sqrt{r}) = r(\sqrt{r} + r) = \boxed{\varepsilon + r\sqrt{r}}$$

$$\frac{1}{x} - \frac{1}{r + \sqrt{r}(r, \sqrt{r})} = r\sqrt{r}$$

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

$$r + \frac{1}{r} = r + \sqrt{r} + \frac{1}{r - \sqrt{r}} = \varepsilon$$

$$\sqrt{r} + \frac{1}{\sqrt{r}} = \sqrt{4} \rightarrow f(r, \sqrt{r}) = \sqrt{4} + r$$

$$f(r, \sqrt{r}) = \sqrt{4} + r$$

$$r f(x) - r f(-x) = \varepsilon x^2 + x^2 \quad \text{سؤال ٣}$$

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

$$\begin{aligned} \varepsilon f(x) - 4 f(-x) &= 1 + x^2 - 2x \\ + 4 f(x) + 4 f(-x) &= 1 + x^2 + 3x \end{aligned} \Rightarrow -5 f(x) = 20x^2 + 4x$$

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

$$(x+r) f(x) - r x f(x, r) = \varepsilon x^2 - m x + 3m-1 \quad f(0) = ? \quad \text{سؤال ٤}$$

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

$$\frac{5m+10}{4} = \frac{3m-1}{4} \Rightarrow 5m+10 = 3m-1 \rightarrow m = -\frac{9}{2}$$

$$f(0) = 3 \times \left(\frac{9}{2}\right) - 1 = \frac{25}{2}$$

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

مسئله (4)

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

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

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

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

دستهای برابر

مسئله (4)

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

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

f = g

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

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

دستهای برابر

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

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

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

$$D_f: x \geq 0$$

دستهای برابر

مسئله (5)

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

$$D_g: x \geq 0$$

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

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

دستهای برابر

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

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

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

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

مسئله (1)

$$f(x) = 0 \text{ است}$$

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

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

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

$$g(x) = 0 \text{ است}$$

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

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

مسئله (9)

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

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

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

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 ١٥

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

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

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

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

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

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

$$|x| = 0 \rightarrow x = 0 \quad h(0) = f(0) = 5$$

$$|x| = 2 \rightarrow \begin{cases} x = 2 \rightarrow h(2) = f(2) = 1 \\ x = -2 \rightarrow h(-2) = f(2) = 1 \end{cases}$$

$$|x| = 3 \rightarrow \begin{cases} x = 3 \rightarrow h(3) = f(3) = -1 \\ x = -3 \rightarrow h(-3) = f(3) = -1 \end{cases}$$

$$h(x) = \{(0, 5), (-2, 1), (2, 1), (-3, -1), (3, -1)\}$$