

حل المسألة بـ ١٩, ٧٥

$$2f(a) = f(-a) + a \rightarrow 2(a+1)(v) = 2a - f + a$$

$$2a + 1f = 2a - f$$

$$3a = -1$$

$$a = -\frac{1}{3} = -\frac{1}{3}$$

سؤال ١ -

سؤال ٢ -

$$f(x) = \sqrt{x} + \frac{1}{\sqrt{x}} + 2 \rightarrow f(2-\sqrt{2}) + f(2+\sqrt{2}) \rightarrow x_1 x_2 = (2-\sqrt{2})(2+\sqrt{2}) = 2 - 2 = 0$$

$$\sqrt{x_1} \times \sqrt{x_2} = 1 \rightarrow \frac{1}{\sqrt{x_1}} = \sqrt{x_2}$$

$$f(x_1) + f(x_2) = (\sqrt{x_1} + \sqrt{x_2}) + (\frac{1}{\sqrt{x_1}} + \frac{1}{\sqrt{x_2}}) + 2 = 2\sqrt{x_1} + 2\sqrt{x_2} + 2$$

$$(\sqrt{x_1} + \sqrt{x_2}) = x_1 + x_2 = 4 \rightarrow \sqrt{x_1} + \sqrt{x_2} = 2 + 2\sqrt{2}$$

سؤال ٣ -

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

$$2x^2 - 2x$$

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

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

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

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

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

سؤال ٤ -

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

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

$$f(0) = \frac{2(4m)-1}{2} = \frac{8m-1}{2} = \frac{12m-1}{2} = \frac{12m-1}{2}$$

$$12m-1 = 12m+1 \rightarrow 12m = 2 \rightarrow m = \frac{1}{6}$$

سؤال ٥ -

$$f = ax+b \rightarrow f(-1) \rightarrow f(-1) + f(-1) = \frac{1+1+1}{-1} = -3$$

$$ax+b + \frac{a}{x} + b = \frac{1}{-1} + \frac{1}{-1} + \frac{1}{-1} = -3$$

سوال ۶ -

$f(u) = (u-1)\sqrt{1-u} \rightarrow Df = 1-u \geq 0 \rightarrow u \leq 1$
 $g(u) = -\sqrt{1-u} \rightarrow -|1-u|\sqrt{1-u} \rightarrow$
 $u < 1 \rightarrow (u-1)\sqrt{1-u}$
 $Dg = Df = (-\infty, 1]$
 نمودار تابع به این است:

$f(u) = u\sqrt{u} \rightarrow Df = u \geq 0$
 $g(u) = \sqrt{u^3} \rightarrow Dg = u^{3/2} \geq 0$
 $|u|\sqrt{u} = u\sqrt{u}$
 $u \geq 0$
 برابرند
 زیرا $\sqrt{u}$ قابل
 است و رابطه
 هر یک است
 $Df = Dg$

$f(u) = [\sqrt{u} - [\sqrt{u}]] \rightarrow Df \rightarrow 0 \leq a - [a] < 1 \rightarrow [a - [a]] = 0$
 $g(u) = \sqrt{u - |u|} \rightarrow u - |u| \geq 0 \rightarrow u \geq |u|$
 $u \in [0, +\infty)$
 $Df = Dg$
 ضابطه در این
 مورد برابر است

سوال ۹ -
 الف) $\left(\frac{f+g}{f-g}\right)(1) = \frac{f(1)+g(1)}{f(1)-g(1)} = \frac{2+1}{2-1} = 3$
 ب) $\left(\frac{f+g}{f-g}\right)(2) = \frac{3+2}{3-2} = 5$
 دقت! $\frac{3+2}{3-2} = 5$
 ت. ن. $\frac{3+2}{3-2} = \frac{5}{1}$

سوال ۱۰ -
 الف) $g(u) = \rightarrow \begin{cases} u-1 \geq 2 \rightarrow u \geq 3 \\ u-1 \geq -1 \rightarrow u \geq 0 \\ u-1 \geq 0 \rightarrow u \geq 1 \\ u-1 \geq -2 \rightarrow u \geq -1 \end{cases}$
 $u \geq 3$
 $f(u) = (u, 1)$
 $g(u) = (1, 0), (0, 1), (-1, 2), (2, -1)$
 $(\frac{1}{3}, 0), (-\frac{1}{3}, 2), (\frac{4}{3}, -1)$

سوال ۱۱ -
 الف) $h(u) = f(|u|) \rightarrow \{(1, 0), (0, 1), (2, -1)\}$
 $h(u) = (1, 0), (0, 1), (2, -1), (-1, 2), (-2, -1)$
 $|u| \geq 2 \rightarrow |u| \geq 2 \rightarrow u = \pm 2$

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

ب) $\frac{f(2)+g(2)}{f(2)-g(2)} = \frac{3+3}{3-3} = \frac{6}{0}$ تقریباً خسته!

پ) $f(-1) \times g(-1) = 0 \times 1 = 0$