



مطالعات: بازدهم ریاضی

بااستاد معتمدی ملکی سرکاره: ۷

نام و نام خانوادگی: آلاء و ساره میری

1

$$f(x) = \sqrt{x+4} \sqrt{x-4} \quad g(x) = \sqrt{x-4} \sqrt{x-4} \quad x > 4$$

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

$$f(x) + g(x) = \sqrt{x-4} + 2 + \sqrt{x-4} - 2 = 2\sqrt{x-4} \quad a=0 \quad b=2 \quad c=-4 \quad \frac{a+b}{c} = \frac{0+2}{-4} = -\frac{1}{2}$$

جواب

2

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

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

$$\frac{g}{f} = \{(2,-\frac{1}{4})(0,1)\}$$

جواب

3

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

$$f(g(x)) = \{(\frac{1}{2},2)(\frac{5}{2},-1)(2,2)(\frac{1}{2},2)\}$$

$$f(g(x)) = \{(1,2)(\sqrt{3},-1)(2,2)(-\sqrt{3},-1)(-2,2)\}$$

جواب

ج

$$g(x) = \{(-5,14)(1,3)(3,9)(-1,1)\}$$

$$\frac{f}{g} = \{(1,-3)(3,-1)(-1,-\frac{1}{3})\} = \{(1,-3)(3,-1)\}$$

جواب

4

$$f(x) = \{(2,1)(3,1)(4,9)(-2,0)\} \quad g = \{(5,1)(2,4)(-3,4)(-1,2)(3,3)\}$$

$$h = 2f + g \quad h = \{(2,5)(3,5)(-2,4)\}$$

جواب

5

$$f(x) = \sqrt{3x-x^2} \quad g(x) = [x] + [-x]$$

$x-2 \neq 0 \Rightarrow x \neq 2$

$[x] + [-x] \rightarrow$ if $x \in \mathbb{Z}$ $\Rightarrow$ $x \in \mathbb{Z}$

if $x \notin \mathbb{Z}$ $\Rightarrow$ $x(n-1) < 0$

$x > 0 \rightarrow x, 0 \rightarrow \sqrt{3x-x^2}, 0 \rightarrow x^2-3x < 0 \rightarrow x(n-1) < 0$

جواب

6

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

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

جواب

الف) $y = x^3 - 3x^2 + 4x - 1 + 1 \rightarrow y = (x-1)^3 + 1$ $y-1 = (x-1)^3 \rightarrow \sqrt[3]{y-1} = x-1 \rightarrow x = \sqrt[3]{y-1} + 1$
 $\sqrt[3]{y-1} \rightarrow$ جواب $R_f = \mathbb{R}$ جواب

ب) $y = \frac{1}{x^2 - 2x + 1} \rightarrow y = \frac{1}{(x-1)^2}$ $y(x-1)^2 = 1 \rightarrow y(x-1) = 1+y \rightarrow (x-1) = \frac{1+y}{y}$
 $x-1 = \sqrt{\frac{1+y}{y}} \rightarrow x = \sqrt{\frac{1+y}{y}} + 1 \rightarrow \sqrt{\frac{1+y}{y}}$ $R_f = (-\infty, -1] \cup (0, +\infty)$ جواب

الف) $y = x^2 - 2x + 1 \rightarrow R_f = [1, +\infty)$ جواب

ب) $y = -x^2 + 4x + 4 \rightarrow R_f = (-\infty, 12]$ جواب

ج) $y = \sqrt{x^2 - 2x - 3} \rightarrow R_f = [0, +\infty)$ جواب

د) $y = \sqrt{4x - x^2} \rightarrow R_f = [0, 2]$ جواب

الف) $y = x^3 - 3x^2 + 2x + 1 \rightarrow R_f = \mathbb{R}$ جواب

ب) $y = x^3 - 4x^2 + 3x + 2 \rightarrow R_f = \mathbb{R}$ جواب

ج) $y = \sqrt{x^3 - 4x^2 + 3x + 1} \rightarrow R_f = [0, +\infty)$ جواب

د) $y = (x^3 - 4x^2 + 3x + 1)^2 \rightarrow R_f = [0, +\infty)$ جواب

الف) $y = \frac{x+1}{x-2} \rightarrow R_f = \mathbb{R} - \{2\}$ جواب

ب) $y = \frac{x+1}{x+1} \rightarrow R_f = \mathbb{R} - \{-1\}$ جواب