

نام و نام خانوادگی: آریسا علیا میری پاسخنامه تشریحی تکلیف شماره ... ۷ ... کلاس یازدهم دبیرستان

$f(x) = \sqrt{x+4} \sqrt{x-4} \quad g(x) = \sqrt{x+4} \sqrt{x-4}$ $(f(x) + g(x))^2 = x+4 \sqrt{x-4} + x-4 \sqrt{x+4} + 2\sqrt{x^2-16}(x-4)$ $2x + 2\sqrt{x^2-16x+4^2} \rightarrow 2x + 2\sqrt{(x-4)^2} \xrightarrow{x \geq 4} 2x + 2x - 16 = 4x - 16 \rightarrow \sqrt{4x-16} = 2\sqrt{x-4}$ $a+b\sqrt{x+c} = 2\sqrt{x-4} \rightarrow a=0, b=2, c=-4 \rightarrow \frac{a+b}{c} = \frac{-1}{4}$	۱
$f(x) = \frac{x+2}{x^2-4x+3} \Rightarrow x \neq 1, 3 \quad g(x) = \{(2,1), (1,2), (3,2), (2,3)\}$ $\frac{g}{f} = \left\{ \left(2, -\frac{1}{4}\right), (0, 2) \right\}$	۲
$f(2x) = \left\{ \left(\frac{1}{2}, 2\right), \left(\frac{3}{2}, -1\right), (2, 2), \left(-\frac{1}{2}, 2\right) \right\}$ الف)	$2g^2(x) + 1 = \{(-2, 1), (1, 3), (3, 9), (-1, 1)\}$ ج)
$f(x^2) = \{(1, 2), (-1, 2), (\sqrt{3}, 1), (-\sqrt{3}, -1), (2, 2), (-2, 2)\}$ ب)	$2\frac{f}{g} = \{(1, -4), (3, -1)\}$ د)
$f(x) = \{(2,1), (3,1), (4,9), (-2,0)\}$ $h = 2f + g = \{(2, 5), (-2, 9), (3, 5)\}$	$g(x) = \{(5,1), (2,3), (-2,9), (-1,2), (3,3)\}$ ۴
$f(x) = \frac{\sqrt{3x-x}}{x-2} \rightarrow \begin{matrix} x > 0 & x < 2 \\ \sqrt{3x-x} > 0 & \sqrt{3x-x} < 0 \end{matrix} \rightarrow \begin{matrix} x < \sqrt{3x} & x > \sqrt{3x} \end{matrix} \rightarrow \begin{matrix} -\sqrt{3} < x < \sqrt{3} \end{matrix}$ $g(x) = [x] \cdot [-x]$ $\left(\frac{f}{g+1}\right)(x) \rightarrow D = [0, 1, 3]$	۵

$f(x) = \sqrt{2x - x^2 - 4} \quad x \neq \pm 2 \quad g(x) = \{(1,3)(2,1)(3,4)(\cancel{4,1})\}$ $h(x), \frac{f(x)}{g(x)} = \{(1,0)(2, \frac{1}{\sqrt{2}})(3,0)\}$				6
$y = x^3 - 3x^2 + 3x$ $y = x^3 - 3x^2 + 3x + 1 - 1$ $y - 1 = (x - 1)^3$ $(x - 1)^3 = y - 1 \rightarrow x = \sqrt[3]{y - 1} + 1 \rightarrow R_f = \mathbb{R}$		$y = \frac{1}{x^2 - 2x}$ $y(x^2 - 2x) - 1 = 0 \rightarrow y = 0 \rightarrow 0 - 0 - 1 = 0 \quad x$ $b^2 - 4ac = 4y^2 + 4y = 0 \quad \frac{-1 \pm \sqrt{1}}{2} = 0, -1$ $R_f = (-\infty, -1] \cup [0, +\infty)$ با فرض $y \neq 0$ عبارت درجه 2 نباشد!		7
الف)	ب)	ج)	د)	8
$y = x^2 - 4x + 10$ $x_{\min} \left \pm \frac{4}{2} = 2 \right.$ $y_{\min} \left 4 - 16 + 10 = 9 \right.$ $R_f = [9, +\infty)$	$y = -x^2 + 4x + 3$ $x_{\max} \left \pm \frac{4}{-2} = -2 \right.$ $y_{\max} \left -9 + 16 + 3 = 10 \right.$ $R_f = (-\infty, 10]$	$y = \sqrt{x^2 - 4x - 3}$ $x_{\min} \left \pm \frac{4}{2} = 2 \right.$ $y_{\min} \left 4 - 16 - 3 = -9 \right.$ $R_f = [0, +\infty)$	$y = \sqrt{4x - x^2}$ $x_{\max} \left \pm \frac{4}{-2} = -2 \right.$ $y_{\max} \left 16 - 9 = 9 \right.$ $R_f = [0, 3]$	
الف)	ب)	ج)	د)	9
$y = x^3 - 2x^2 + 2x + 1$ $R_f = \mathbb{R}$	$y = x^3 - 4x^2 + 3x + 2$ $R_f = \mathbb{R}$	$y = \sqrt{x^3 - 4x^2 + 2x + 1}$ $R_f = [0, +\infty)$	$y = (x^3 - 4x^2 + 3x + 1)^2$ $R_f = [0, +\infty)$	
الف)	ب)	ج)	د)	10
$y = \frac{3x+1}{x-2}$ $\mathbb{R} - \{\frac{a}{c}\} = \mathbb{R} - \{\frac{3}{-2}\}$	$y = \frac{2x+1}{x+1}$ $\mathbb{R} - \{\frac{a}{c}\} = \mathbb{R} - \{1\}$			

الف) $y = n^3 - 2n^2 + 2n - 1 + 1 = y = (n-1)^3 + 1$ (۷)

$$y-1 = (n-1)^3 \rightarrow \sqrt[3]{y-1} = n-1 \rightarrow n = \sqrt[3]{y-1} + 1$$

$\mathcal{R}_f = \mathbb{R}$

ب) $y = \frac{1}{n^2 - 2n} \rightarrow n^2 y - 2ny = 1 \rightarrow n^2 y - 2ny - 1 = 0$

$y \neq 0 \rightarrow n = \frac{2y \pm \sqrt{4y^2 + 4y}}{2y} \rightarrow 4y(y+1) \geq 0 \rightarrow \frac{-1}{\frac{1}{4} - \frac{1}{4}} \rightarrow \frac{-1}{0}$

$y = 0 \rightarrow 0 = 1 \times$ صفتی وجود ندارد! $\rightarrow \mathcal{R}_f = (-\infty, -1] \cup (0, +\infty)$