

نام و نام خانوادگی ..... پاورقی ..... پاسخنمه تشریحی تکلیف شماره ۷ ..... کلاس ..... یازدهم .....  
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$$f(x) + g(x) = a + b\sqrt{x+c} = \sqrt{x-4}\sqrt{x-4} + \sqrt{(x-4)+2}^2$$

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

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

الف)  $f(2x) = \left\{ \left(\frac{1}{2}, 2\right), \left(\frac{3}{2}, -1\right), (2, 2), \left(-\frac{1}{2}, 2\right) \right\}$   
 ب)  $f(x^2) = \left\{ (1, 2), (-1, 2), (\sqrt{2}, -1), (-\sqrt{2}, -1), (2, 2), (-2, 2) \right\}$   
 ج)  $2g(x)+1 = \left\{ (-1, 9), (1, 3), (3, 9), (-3, 1) \right\}$   
 د)  $\frac{2f}{g} = \left\{ (1, 4), (2, -1) \right\}$

$$h = 2fg = \left\{ (2, 5), (2, 5), (-2, 6) \right\}$$

$f(x) = \frac{\sqrt{x^2 - x}}{x-1} \rightarrow \begin{cases} x^2 - x > 0 \rightarrow x(x-1) > 0 \\ x^2 - x > 0 \rightarrow x^2 > x \end{cases} \rightarrow \begin{cases} x < 0 \text{ or } x > 1 \\ x > 1 \end{cases}$

$g(x) = [x] + [-x] \rightarrow \begin{cases} x \in \mathbb{Z} \rightarrow g(x) = 1 \\ x \notin \mathbb{Z} \rightarrow g(x) = 0 \end{cases}$

$h = \left(\frac{f}{g+1}\right)(x) \Rightarrow D_h = \{0, 1, 2\}$

$$f(x) = \sqrt{a^2 - x^2 - c} \Rightarrow -a^2 \leq a^2 - x^2 - c \leq 0 \quad \frac{1}{-d + b} \rightarrow D_f = [1, 4]$$

$$h(x) = \frac{f(x)}{g(x)} = \left\{ (1, 0), (2, \frac{\sqrt{3}}{2}), (4, 0) \right\}$$

$$\text{الف) } y = a^3 - 3a^2 + 2a \Rightarrow y - 1 = (a - 1)^3 \Rightarrow a - 1 = \sqrt[3]{y - 1} \\ a = 1 + \sqrt[3]{y - 1} \Rightarrow y \in \mathbb{R}$$

$$R_f = \mathbb{R}$$

$$\text{ب) } y = \frac{1}{a^2 - 2a} \Rightarrow y a^2 - 2a y - 1 = 0 \\ a = \frac{2y \pm \sqrt{4y^2 + 4y}}{2y} \rightarrow 4y^2 + 4y > 0 \quad \frac{-1 \pm 0}{\pm 2 - 2} \\ R_f = (-\infty, -1] \cup (0, +\infty)$$

$$\text{الف) } y = a^2 - 4a + 1 \quad a_{\min} = 2 \quad y_{\min} = -7 \quad R_f = [-7, +\infty)$$

$$\text{ب) } y = -a^2 + 4a + 2 \quad a_{\max} = 2 \quad y_{\max} = 10 \quad R_f = (-\infty, 10]$$

$$\text{ج) } y = \sqrt{a^2 + 4a - 3} \quad a_{\min} = 2 \quad y_{\min} = \sqrt{4 + 8 - 3} = 3 \quad R_f = [3, +\infty) = [0, +\infty)$$

$$\text{د) } y = \sqrt{4a - a^2} \quad a_{\max} = 2 \quad y_{\max} = 2 \quad R_f = (-\infty, 2] = [0, 2]$$

$$\text{الف) } y = a^3 - 3a^2 + 2a + 1 \quad R_f = \mathbb{R}$$

$$\text{ب) } y = a^3 - 4a^2 + 2a + 2 \quad R_f = \mathbb{R}$$

$$\text{ج) } y = \sqrt{a^3 - 4a^2 + 2a + 1} \quad R_f = [0, +\infty)$$

$$\text{د) } y = (a^3 - 4a^2 + 2a + 1)^2 \rightarrow R_f = [0, +\infty)$$

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

$$\text{ب) } y = \frac{2a+1}{a+1} \rightarrow R_f = \mathbb{R} - \{1\}$$