

۲. آفرین به شما

ایزیدم حضرت

برای محبتش

Subject.

تکلیف

Day. Month. Year.

$$\left. \begin{aligned} f(x) &= \sqrt{x+4}\sqrt{x-4} \\ g(x) &= \sqrt{x-4}\sqrt{x+4} \end{aligned} \right\} \begin{aligned} t &= \sqrt{x-4} \Rightarrow x = t^2 + 4 \\ f(x) &= \sqrt{t^2 + 4t + 4} \rightarrow \sqrt{(t+2)^2} = t+2 \end{aligned} \quad (1)$$

$$\begin{aligned} g(x) &= \sqrt{t^2 - 4t + 4} = \sqrt{(t-2)^2} = t-2 \\ f(x) + g(x) &= 2t = 2\sqrt{x-4} = a + b\sqrt{x+c} \Rightarrow \begin{cases} a=0 \\ b=2 \\ c=-4 \end{cases} \\ \frac{a+b}{c} &= \frac{-2}{-4} = \frac{1}{2} \quad (2) \end{aligned}$$

$$\left. \begin{aligned} f(x) &= \frac{x+2}{(x-1)(x-3)} \Rightarrow D_f = \mathbb{R} - \{1, 3\} \\ D_g &= \{1, 1, 3, 3\} \Rightarrow D_g \cap D_f = \{0, 2\} \end{aligned} \right\} \frac{g}{f} = \left\{ (0, 4), (2, -\frac{1}{2}) \right\} \quad (3)$$

$$(الف) f(x) = \left\{ \left(\frac{1}{2}, 2\right), \left(\frac{3}{2}, -1\right), (1, 2), \left(-\frac{1}{2}, 9\right) \right\} \quad (3)$$

$$(ب) f(x^2) = \left\{ (-1, 2), (1, 2), (\sqrt{3}, -1), (-\sqrt{3}, -1), (2, 2), (-2, 2) \right\}$$

$$(ج) 2g^2(x) + 1 = \left\{ (-2, 19), (1, 3), (3, 9), (-1, 1) \right\}$$

$$د) \frac{f}{g} = \left\{ (1, -5), \left(\frac{3}{2}, -1\right) \right\} \quad (2)$$

$$h = \{f, g\}$$

(3)

$$h = \{(1, 2), (3, 2), (-1, 4)\}$$

(4)

$$Df = [0, 2) \cup (2, 3]$$

(5)

$$1) x \geq 0, 2) \sqrt{2x} - x \geq 0 \Rightarrow x(2-x) \geq 0 \Rightarrow x \in [0, 2]$$

$$3) x \neq 2$$

$$g(x) = [x] + [-x] \rightarrow (Z) dx = 9 \Rightarrow g(x) + 1 = 1$$

$$x \in (R-Z) dx = -1 \Rightarrow g(x) + 1 = 0$$

$$Dg = \overline{Z} \text{ مع كل } x \in \mathbb{R} \Rightarrow x \in \mathbb{R} \setminus \mathbb{Z}$$

$$Df \cap Dg = \{1, 2, 3\}$$

(6)

$$f(x) = \sqrt{-(x-1)(x-4)} \rightarrow Df = [1, 4]$$

(7)

$$Dg = \{1, 2, 3, 4\}$$

$$Dg \cap Df = \{1, 2, 3, 4\}$$

(8)

$$h = \{(1, 2), (2, \frac{\sqrt{2}}{2}), (4, 0)\}$$

$$a) y = x^3 - 3x^2 + 3x \rightarrow -1 + 1$$

(9)

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

$$Rf = \mathbb{R}$$

ب) $yx^2 - 2xy - 1 = 0 \Rightarrow x = \frac{+1 \pm \sqrt{4y^2 + 4y}}{2y}$

1) $y \neq 0$

2) $4y^2 + 4y \geq 0 \Rightarrow 4y(y+1) \geq 0$ $\frac{-1 \pm \sqrt{1+4}}{2}$ $\textcircled{2}$ $R_f = (-\infty, -1] \cup (0, +\infty)$

ا) $y = x^2 - 6x + 6$ $\min = \begin{bmatrix} 3 \\ 9 \end{bmatrix} \Rightarrow R_f = [9, +\infty)$ $\textcircled{1}$
 $\frac{-b}{2a} = 3$

ب) $y = -x^2 + 4x + 1$ $\max = \begin{bmatrix} 2 \\ 12 \end{bmatrix} \Rightarrow R_f = (-\infty, 12]$
 $\frac{-b}{2a} = 2$

ج) $y = \sqrt{x^2 - 6x + 5}$ $\min = \begin{bmatrix} 3 \\ -1 \end{bmatrix}$ $\frac{-b}{2a} = 3$ $R_f = [-1, +\infty)$ $\Rightarrow R_f = [0, +\infty)$ $\checkmark$

د) $y = \sqrt{4x - x^2}$ $\max = \begin{bmatrix} 2 \\ 2 \end{bmatrix}$ $\frac{-b}{2a} = 2$ $R_f = (-\infty, 2]$ $\Rightarrow R_f = [0, 2]$ $\textcircled{2}$

ه) $\rightarrow$ $y \in \mathbb{R}$ $\textcircled{9}$
 $\mathbb{R} \subset \mathbb{R}$

ب) $R_f = \mathbb{R}$

ج) $\rightarrow \mathbb{R} \xrightarrow{\text{نیز از آنجا}} R_f = [0, +\infty)$

$\rightarrow) IR \xrightarrow{\text{محدود}} [r, +\infty) \setminus R_f$
 کتفه مانتا

اف) $g = \frac{r_{n+1}}{n-2} \rightarrow R_f = IR \setminus \left\{ \frac{a}{c} \right\} \xrightarrow{\frac{ax+b}{cx+d}} \leftarrow \text{المنزلة}$ (1.)

$R_f = IR \setminus \left\{ \frac{a}{c} \right\} \leq (-\infty, r) \cup (r, +\infty)$ (2.)

ب) $g = \frac{r_{n+1}}{n+1} \rightarrow \text{محدود} \Rightarrow R_f = IR \setminus \{r\}$