

# ایلیا رضائی

$D_f = -x^2 + 2x - 4 \geq 0 \rightarrow D_f = [1, 3]$  (1)

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

الف) IR

ب)  $g(x^2 - 2x) = k \rightarrow 1 \geq \frac{-1}{1-1}$

$\rightarrow 4y^2 - 4(-y) \geq 0 \rightarrow 4y(y+1) \geq 0$

$R = (-\infty, -1] \cup (0, \infty)$  (3)

الف)  $\left. \frac{f}{g} \right|_{\min} = \frac{f}{g} = 2$   
 $R = [2, \infty)$  (4)

ب)  $\left. \frac{f}{g} \right|_{\max} = \frac{f}{g} = 2$   
 $-9 + 11 + 3 = 13$   $R = (-\infty, 13]$

ج)  $\left. \frac{f}{g} \right|_{\min} = \frac{f}{g} = 2$   
 $4 - 11 - 3 = -10$

$R = \sqrt{[-10, \infty)} = [3, \infty)$

د)  $\left. \frac{f}{g} \right|_{\max} = \frac{f}{g} = 3$   
 $-9 + 11 = 2$   $R = [-2, 3]$

الف) IR (1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15) (16) (17) (18) (19) (20) (21) (22) (23) (24) (25) (26) (27) (28) (29) (30) (31) (32) (33) (34) (35) (36) (37) (38) (39) (40) (41) (42) (43) (44) (45) (46) (47) (48) (49) (50) (51) (52) (53) (54) (55) (56) (57) (58) (59) (60) (61) (62) (63) (64) (65) (66) (67) (68) (69) (70) (71) (72) (73) (74) (75) (76) (77) (78) (79) (80) (81) (82) (83) (84) (85) (86) (87) (88) (89) (90) (91) (92) (93) (94) (95) (96) (97) (98) (99) (100)

د)  $\sqrt{(IR)^2} \rightarrow R = [1, \infty)$

الف) IR - {3}

ب) IR - {2}

$\sqrt{x-4} + \sqrt{x+4} = f(x) + g(x)$  (1)  
 $\xrightarrow{\frac{2}{x-4}} x-4\sqrt{x-4} + x+4\sqrt{x-4} + 2\sqrt{x^2-16} + 4$

$\rightarrow 2x + 2(x-4) = 2x + 2x - 8$

$= 4x - 8 \rightarrow \sqrt{4(x-4)} = 2\sqrt{x-4}$

$\rightarrow 2\sqrt{x-4} = a + b\sqrt{x+c}$

$\rightarrow a=0, b=2, c=-4 \rightarrow \frac{a+b}{c} = \frac{-1}{2}$

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

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

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

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

د)  $\left\{ (1, -4) (-3, -1) \right\} \rightarrow g(-1) = 2$

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

$\sin \left( \frac{f}{g+1} \right) (x) \begin{cases} ID \cap Dg \\ \text{II } g \neq -1 \end{cases}$  (5)

I  $Dg = IR$   $Df = \sqrt{3x} - x \geq 0 \} x \neq -2$

$\rightarrow \sqrt{3x} \geq x \rightarrow 3x \geq x^2 \rightarrow x^2 - 3x \leq 0$

$Df = [0, 3] - \{2\}$

II  $g(x) \neq -1 \rightarrow x \neq 2$

$Df = \{3, \text{داره}\}$   
 $\rightarrow D = [-2, 3] - \{2\} - \{IR - Z\}$