

$$f(x) + g(x) = \sqrt{x+4}\sqrt{x-4} + \sqrt{x-4}\sqrt{x-4} = \sqrt{x-4} + 4\sqrt{x-4} + 4 + \sqrt{x-4} = 2\sqrt{x-4} + 4 \quad (1)$$

$$\sqrt{(\sqrt{x-4}+2)^2} + \sqrt{(\sqrt{x-4}-2)^2} = |\sqrt{x-4}+2| + |\sqrt{x-4}-2|$$

حالا چون $x \geq 4$ هر دو
تور مطلق را می‌توانیم برمی‌داریم

$$\begin{aligned} \text{پس} \rightarrow \sqrt{x-4}+2 + \sqrt{x-4}-2 &= 2\sqrt{x-4} = a+b\sqrt{x}+c \\ \frac{a+b}{c} &= \frac{2}{-4} = \left(-\frac{1}{2}\right) \rightarrow c = -4 \end{aligned}$$

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

$$g(x) = \left\{ (2, 1), (1, 0), (3, \infty), (0, 4) \right\}$$

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

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

$$الف) f(x^2) = \left\{ (\frac{1}{4}, 2), (\frac{4}{4}, -1), (2, 2), (-\frac{1}{4}, 4) \right\}$$

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

$$ج) \left\{ (-2, 4), (1, 3), (3, 4), (-1, 1) \right\}$$

$$د) \left\{ (1, -4), (3, -1) \right\}$$

$$\left\{ (2, \infty), (3, \infty), (-2, 4) \right\}$$

$$\begin{aligned} \frac{f(x)}{g(x)+1} &\rightarrow \frac{x-2 \neq 0 \rightarrow x \neq 2}{x \neq 0} \quad \sqrt{x} - x \neq 0 \rightarrow \sqrt{x} \neq x \\ &\rightarrow g(x) \rightarrow 2 \\ &\rightarrow \text{انتخاب} \rightarrow \{0, 1, 3\} \end{aligned} \quad (5)$$

$$\begin{aligned} x_n &\neq x \\ x_n - x &\neq 0 \\ n(x-x) &\neq 0 \rightarrow \frac{0}{1-1} \\ [0, 3] - 2 \end{aligned}$$

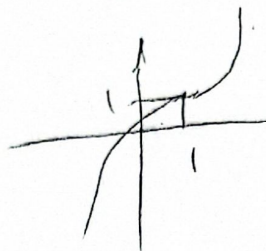
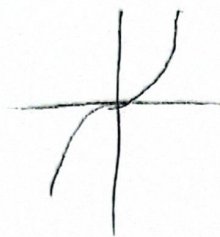
$$f(x) = \left\{ (1, 0), (2, 2), (0, 0) \right\}$$

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

الف) $x^3 - 3x^2 + 3x + 1 = y$

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

$y = (x-1)^3 + 1$



ج) $y(x^2 - 2x) = 1$

$x^2 - 2x = \frac{1}{y} \rightarrow x^2 - 2x - \frac{1}{y} = 0$

$\Delta = b^2 - 4ac = 4 - 4(-\frac{1}{y}) = 4 + \frac{4}{y} \geq 0 \rightarrow (y+1)^2 \geq 0$

$(-\infty, -1] \cup (0, +\infty)$

$y < -1$
 $y \neq 0$

$\frac{2 + \frac{2}{y}}{2} \geq 0 \rightarrow \frac{y+1}{y} \geq 0$

$x = \frac{-b}{2a} = \frac{2}{2} = 1$

Ⓐ

الف) $x^2 - 4x + 1 \rightarrow a > 0 \rightarrow \min$

$y = 4 - 1 + 1 = 4 \rightarrow [4, +\infty)$

ب) $-x^2 + 4x + 2 \rightarrow a < 0 \rightarrow \max$

$x = -\frac{b}{2a} = \frac{4}{-2} = -2$

$y = -9 + 18 + 2 = 11$

$(-\infty, 11]$

ج) $\sqrt{x^2 - 4x - 3} \rightarrow a > 0 \rightarrow \min$

$x = \frac{b}{2a} = \frac{2}{1} = 2$

$y = 4 - 8 - 3 = -7$

$[-7, +\infty)$

$(0, +\infty)$

د) $\sqrt{4x - x^2} \rightarrow a < 0 \rightarrow \max$

$x = -\frac{b}{2a} = \frac{2}{-1} = -2$

$y = 18 - 9 = 9$

$[-\infty, 9] \rightarrow (0, 2)$

الف) R

ج) $\sqrt{R} \rightarrow (c, +\infty)$

Ⓐ

ب) R

د) R

الف) $R = \{x^2\}$

Ⓐ

ب) $R = \{x^2\}$