

... $\sqrt{x+1}$... $\sqrt{x-1}$... $\sqrt{x+1}$... $\sqrt{x-1}$...

$$g(x) + f(x) = a + b \sqrt{x+1}, \quad g(x) + f(x) = \sqrt{x-1} + \sqrt{x+1} + \sqrt{x+1} + \sqrt{x-1}$$

$$\sqrt{x-1} = \sqrt{x+1}$$

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

$$D_f = \frac{x+1}{x^2-x+1} \Rightarrow x^2-x+1 \neq 0 \Rightarrow (x+\frac{1}{2})^2 + \frac{3}{4} \neq 0 \Rightarrow \boxed{x \neq -\frac{1}{2}}$$

$$D_f \cap D_g = \{0, 1\} \Rightarrow \frac{g(x)}{f(x)} = \left\{ \left(0, \frac{1}{1}\right), \left(1, \frac{1}{1}\right) \right\}$$

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

ا) $f(x) = x$...

ب) $f(x) = \{(1, 1), (1, 1)\} \Rightarrow f(x) = \{(1, 1)\}$

ج) $g(x) = \{(-1, 1), (1, 1), (1, 1), (-1, 1)\}$

د) $\frac{g}{f} \cap D_g = \{1\} = \{(1, 1)\}$... $\frac{g}{f} = \{(1, 1), (1, 1)\} = \{(1, 1)\}$

$$D_f \cap D_g = \{1, -1, 1\}$$

$$h = f + g \Rightarrow h = \{(1, 1), (-1, 1), (1, 1)\}$$

$$D_f = \frac{\sqrt{x+1}}{x-1} \Rightarrow \sqrt{x+1} \neq 0 \Rightarrow x \neq -1$$

$$D_g = \mathbb{R}$$

$$D_f = [0, 1] - \{1\}$$

$$D_f \cap D_g = \mathbb{R} \cap [0, 1] - \{1\} \Rightarrow \boxed{D_f \cap D_g = [0, 1] - \{1\}}$$

$$D_f = \omega n - n^r - \varepsilon \geq 0 \Rightarrow n^r - \omega n + \varepsilon \leq 0 \Leftrightarrow (n-1)(n-\varepsilon) \leq 0$$

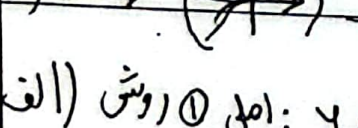
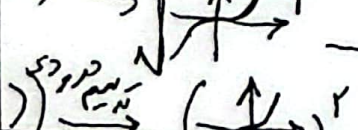
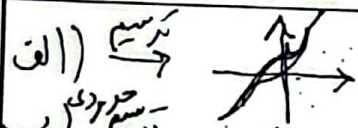
$$\frac{1}{1-\varepsilon} \quad D_f = [1, \varepsilon] \quad D_f \cup D_g = \{1, \varepsilon\}$$

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

الف) $y = n^r - 2n^r + 2 - 1 + 1 \Rightarrow y = (n-1)^2 + 1 \Rightarrow y-1 = (n-1)^2 \Rightarrow \sqrt{y-1} = n-1$
 $n = \sqrt{y-1} + 1 \Rightarrow R_f = [1, \infty)$

ب) $y n^r - 2y n = 1 \Rightarrow n^r - 2n = \frac{1}{y} \Rightarrow n - 2n + 1 = \frac{1+y}{y} \Rightarrow (n-1)^2 = \frac{1+y}{y} \Rightarrow \sqrt{\frac{1+y}{y}} = n-1$
 $\sqrt{\frac{1+y}{y}} + 1 = n \Rightarrow R_f = (-\infty, -1] \cup [0, +\infty)$

ج) $y = n^r - \varepsilon n + 10 \Rightarrow \frac{-b}{2a} = 2 \Rightarrow y = \varepsilon - 10 + 10 \Rightarrow y_{\min} = 0 \Rightarrow R_f = [0, +\infty)$
 د) $y = -n^r + 2n + 3 \Rightarrow \frac{-b}{2a} = 2 \Rightarrow y = -9 + 10 + 3 \Rightarrow y_{\max} = 4 \Rightarrow R_f = (-\infty, 4]$
 هـ) $y = \sqrt{n^r - \varepsilon n - 3} \Rightarrow \frac{-b}{2a} = 2 \Rightarrow y = \varepsilon - 10 - 3 = -13 \Rightarrow y_{\min} = -13 \Rightarrow R_f = [-13, +\infty)$
 و) $y = \sqrt{4n - n^r} \Rightarrow \frac{-b}{2a} = 2 \Rightarrow y = \sqrt{10 - 9} \Rightarrow y = 1 \Rightarrow R_f = [0, 1]$

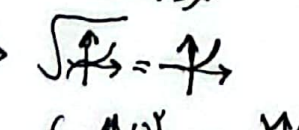


چون توان منفر
دارد

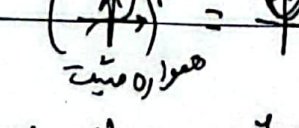
$$R_f = \mathbb{R}$$

چون بزرگترین مقدار
مقدار است

$$R_f = \mathbb{R}$$



$$\sqrt{R_f} = \sqrt{\mathbb{R}} \Rightarrow R_f = [0, +\infty)$$



$$\sqrt{R_f} = [0, 1] \Rightarrow R_f = [0, +\infty)$$

الف) روش ۱: $y n + y = 2n + 1 \Rightarrow y n - 2n = y + 1 \Rightarrow n(y-2) = y+1 \Rightarrow n = \frac{y+1}{y-2}$
 $R_f \neq 2 \Rightarrow R_f = \mathbb{R} - \{2\}$

ب) روش ۱: $y n + y = 2n + 1 \Rightarrow y n + 2n = -y + 1 \Rightarrow n(y+2) = -y+1 \Rightarrow n = \frac{-y+1}{y+2}$
 $R_f \neq -2 \Rightarrow R_f = \mathbb{R} - \{-2\}$

روش ۲: $R_f = \mathbb{R} - \{2\}$

روش ۳: $R_f = \mathbb{R} - \{2\}$