

« زهد الدربانی » « یازدهم روضه » « کتاب حنبله » « تالیف شیخ یوسف »

$$2x^2 - 4x + y^2 + 4y + K = 0 \rightarrow 2(x-1)^2 + (y+2)^2 - 11 + K = 0 \quad -1$$

$$2(x-1)^2 + (y+2)^2 = 11 - K \rightarrow 11 - K = 0 \rightarrow \boxed{K = 11}$$

$$a^2 + 2a = 3a + 2 \rightarrow a^2 + a - 2 = 0 \rightarrow (a-1)(a+2) = 0$$

$\downarrow \quad \downarrow$
 $a=1 \quad a=-2$

$$f(1) = 1 + 2 = \boxed{3}$$

$$|x+1| \geq 2 \rightarrow x+1 \geq 2 \rightarrow x \geq 1$$

$$x+1 \leq -2 \rightarrow x \leq -3$$

$$x=3 \rightarrow \text{مسترد به ازای } 11-b, a-4 \rightarrow a+b, \boxed{15}$$

$$\left. \begin{array}{l} 4x - a \geq 0 \rightarrow x \geq \frac{a}{4} \\ b - 3x \geq 0 \rightarrow x \leq \frac{b}{3} \end{array} \right\} \frac{a}{4} = \frac{b}{3} \rightarrow a = \frac{4}{3}b \rightarrow \frac{b}{a} = \boxed{\frac{3}{4}}$$

$$y = \sqrt{\frac{x+1}{(x-1)^2}} + \sqrt{\frac{4-x}{x^2+12x+5}} \quad \text{الف}$$

$\sqrt{x-1} \quad \sqrt{x^2+12x+5}$

$$4-x \geq 0 \rightarrow x \leq 4 \quad \text{د}$$

$$x+1 \geq 0 \rightarrow x \geq -1 \quad \text{ب}$$

$$D_f = \text{د} \cap \text{ب} \cap \text{د} = \boxed{[-1, 4]}$$

$$y = \sqrt{[x]-5} + \sqrt{2-[x]} \quad \text{ب}$$

$$[x]-5 \geq 0 \rightarrow [x] \geq 5 \rightarrow D_{f_1} = [5, +\infty)$$

$$2-[x] \geq 0 \rightarrow [x] \leq 2 \rightarrow D_{f_2} = (-\infty, 2]$$

$$D_{f_1} \cap D_{f_2} = \emptyset$$

$$y = \sqrt{\frac{x^2 - x - 4}{x^2 - 13x^2 + 14x}} - \sqrt{\frac{(x+2)(x-3)}{(x-1)(x+2)(x-3)(x+3)}}$$

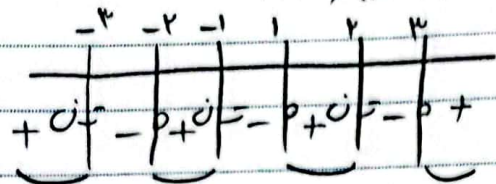
$\frac{x^2 - x - 4}{x^2 - 13x^2 + 14x} = \frac{(x+2)(x-3)}{(x-1)(x+2)(x-3)(x+3)}$

$$+ \frac{-2}{x-1} - \frac{2}{x+2} + \frac{3}{x-3} - \frac{3}{x+3} \rightarrow D_f = (-\infty, -3) \cup (1, 3) \cup (3, +\infty)$$

SABA

$$(b) y = \sqrt{\frac{(x-1)(x^2-x-4)}{(x^3-2x^2-5x+4)}} = \sqrt{\frac{(x-1)(x+2)(x-3)}{(x+1)(x-2)(x+3)}}$$

$(x-1) \quad (x+2) \quad (x-3)$
 $(x+1) \quad (x-2) \quad (x+3)$



$$D_f = (-\infty, -3) \cup [-2, -1) \cup [1, 2) \cup [3, +\infty)$$

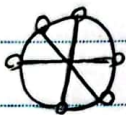
$$(الف) y = \sqrt{[-x]-2} \rightarrow [-x]-2 \geq 0 \rightarrow [-x] \geq 2 \rightarrow D_f = (-\infty, -2] \quad \checkmark$$

$$(b) y = \frac{5x^2+4}{[x]^2-1[x]-3} \rightarrow D_f = \mathbb{R} - \{[-1, 0) \cup [3, \infty)\}$$

$$[x]^2-1[x]-3 \neq 0 \rightarrow ([x]+1)([x]-3) = 0$$

$[x] = -1 \quad [x] = 3$

$$(الف) y = \frac{\cot x + 1}{\tan x + 1} \rightarrow \tan x + 1 \neq 0 \rightarrow \tan x \neq -1$$



$$\cos x \neq 0$$

$$\sin x \neq 0$$

$$D_f = \mathbb{R} - \left\{ \frac{k\pi}{4}, k\pi - \frac{\pi}{4} \right\}$$

$$(b) y = \sqrt{1 - \epsilon \sin^2 x} \rightarrow 1 - \epsilon \sin^2 x \geq 0 \rightarrow \epsilon \sin^2 x \leq 1 \rightarrow \sin^2 x \leq \frac{1}{\epsilon}$$

$$\rightarrow -\frac{1}{\sqrt{\epsilon}} \leq \sin x \leq \frac{1}{\sqrt{\epsilon}} \rightarrow D_f = \left[k\pi + \frac{\pi}{4}, k\pi - \frac{\pi}{4} \right]$$

$$(الف) y = \sqrt{1 - \log_{\frac{1}{e}}^{x-1}} \quad x-1 > 0 \rightarrow x > 1 \quad D_f = \left[\frac{e}{e-1}, +\infty \right)$$

$$1 - \log_{\frac{1}{e}}^{x-1} \geq 0 \rightarrow \log_{\frac{1}{e}}^{x-1} \leq 1 \Rightarrow x-1 \geq \frac{1}{e} \rightarrow x \geq \frac{e}{e-1}$$

$$(b) y = \frac{\sqrt{x^2-x}}{1 - \log_{\epsilon}^{x^2-3x}} \rightarrow x^2-x \geq 0 \rightarrow x(x-1) \geq 0 \rightarrow x \in (-\infty, 0] \cup [1, +\infty)$$

$$1 - \log_{\epsilon}^{x^2-3x} \neq 0 \rightarrow \log_{\epsilon}^{x^2-3x} \neq 1 \rightarrow x^2-3x \neq \epsilon \rightarrow x^2-3x-\epsilon \neq 0$$

$$(x+1)(x-4) \neq 0 \rightarrow x \neq -1, 4$$

$$D_f = (-\infty, -1) \cup (-1, 4) \cup (4, +\infty)$$

$$(الف) y = \sqrt{1 - \epsilon x - x^2} \rightarrow 1 - \epsilon x - x^2 \geq 0 \rightarrow x^2 + \epsilon x - 1 \leq 0$$

$$\rightarrow x^2 - \epsilon x + 1 \leq 0 \rightarrow (x-1)(x-3) \leq 0 \rightarrow x \in [1, 3]$$

$$(b) y = \left(\frac{px+q}{rx+s} \right)! \rightarrow \frac{px+q}{rx+s} \in \mathbb{N} \rightarrow px+q = rxw + \epsilon w$$

$$\rightarrow D_f = \left\{ x \mid x = \frac{\epsilon w - q}{r - p}, w \in \mathbb{N} \right\} \quad ABA$$