

$$2x^2 + y^2 - 4x + 4y + 10 = 0$$

$$(x^2 - 2x + 1) + (x^2 - 2x + 1) + (y^2 + 4y + 4)$$

$$10 = 11$$

$$(x-1)^2 + (x-1)^2 + (y+2)^2 = 0$$

صفر

$$\begin{array}{c|c} 1 & 1 \\ \hline -x & \end{array}$$

به ازای a یک مقابله بدهد :

$$\begin{cases} x^2 + 4x & x \geq a \\ 2x^2 + a + 2 & x < a \end{cases}$$

$$a^2 + 4a = 2a + a + 2$$

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

وقتی $a = 1$ و $a = -2$

$$f(1) = f(a) = 1 + 4 = 5$$

$$\rightarrow 2 + 1 + 2 = 5$$

$$|x+1| > 2 \Rightarrow x+1 > 2 \Rightarrow x > 1$$

$$|x+1| < -2 \Rightarrow x < -3$$

هم در بازه اول است و هم در بازه دوم پس در هر ۲ تن جواب دارد.

$$18 - b = a - 6 \Rightarrow a + b = 24$$

$$\begin{cases} 2x^2 - b & |x+1| \geq 2 \\ a + 2x & -3 \leq x < -1 \end{cases}$$

فقط ۲ در هر ۲ صدق می کند.

$$I. 4x - a \geq 0 \Rightarrow 4x \geq a \Rightarrow x \geq \frac{a}{4}$$

$$II. b - 3x \geq 0 \Rightarrow 3x \leq b \Rightarrow x \leq \frac{b}{3}$$

$$2 = \frac{a}{4} = \frac{b}{3} \Rightarrow \frac{b}{a} = \frac{3}{4} = \frac{1}{\frac{4}{3}}$$

$$\begin{array}{c} a = 12 \\ b = 4 \end{array} \rightarrow \frac{b}{a} = \frac{4}{12} = \frac{1}{3}$$

الف) $\sqrt{\frac{x+1}{|x-3|}} + \sqrt{\frac{4-x}{x^2+2x+5}} \Rightarrow$

$\frac{x^2+2x+5}{x^2+2x+5} \sim (x+1)^2+4$
 $\Delta = -14 = \Delta < 0$ $\Rightarrow$ $\circ, b, \Delta K$

ب) $\sqrt{[x]-5} + \sqrt{2-[x]}$
 $[x] \geq 5$ $[x] \leq 2$
 $I: [x] \geq 5$ $II: x < 3$

$D_f = I \cap II \Rightarrow$
 $D_f = [-1, 4] - \{3\}$

$[x] - 5 \geq 0$ $2 - [x] \geq 0$
 $\circ) \sqrt{[x]-5} + \sqrt{2-[x]}$
 $[x] \geq 5$ $[x] \leq 2$
 $I: [x] \geq 5$ $II: x < 3$
 $D_f = \emptyset$

$I \cap II = \emptyset$

الف) $\sqrt{x^2-x-4} + \sqrt{x^2-13x^2+24} \Rightarrow$
 $x^2-13x^2+24 \Rightarrow t^2-13t+24=0 \Rightarrow (t-9)(t-4)=0$
 $t = x^2 \Rightarrow x^2=9 \rightarrow x=\pm 3$
 $x^2=4 \rightarrow x=\pm 2$

$D_f = \mathbb{R} - [-3, 2] - \{3\}$

صورت	+	+	-	-	+
مخرج	+	+	-	+	-
عل	+	-	-	+	+

ب) $\sqrt{x^3-2x^2-\Delta x+4} + \sqrt{x^3+2x^2-\Delta x-4}$
 $\sqrt{(x-1)(x-3)(x+2)} + \sqrt{(x+1)(x+3)(x-2)}$

ج) $\sqrt{x^3-2x^2-\Delta x+4} + \sqrt{x^3+2x^2-\Delta x-4}$
 $\sqrt{(x-1)(x-3)(x+2)} + \sqrt{(x+1)(x+3)(x-2)}$

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

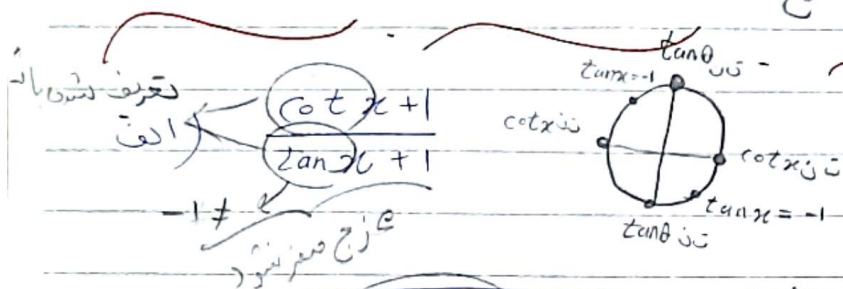
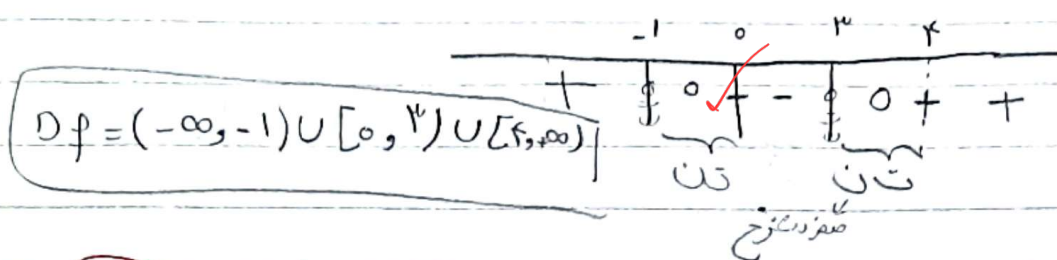
$$y = \sqrt{[-x] - 2} \rightarrow [-x] - 2 \geq 0 \Rightarrow [-x] \geq 2$$

$$-x \geq 2 \Rightarrow x \leq -2$$

$$D_f = (-\infty, -2]$$

ب) $2x^2 + 9$ $\Delta = 0 - 12 < 0$ $\oplus$ $\Delta < 0$

$$[x^2 - 2[x] - 2] \rightarrow ([2x] - 2)([2x] + 1)$$



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

ج) $\sqrt{x^2 - x}$ $x(x-1) \geq 0$

$$1 - \log_{\frac{x^2 - 3x}{x^2 - 3x}} \rightarrow x^2 - 3x \geq 0 \rightarrow x(x-3) \geq 0$$

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

$$(x^2 - 3x - 4) \neq 0 \Rightarrow (x-4)(x+1) \rightarrow x \neq 4, -1$$

$$D_f = I \cap II \cap III \Rightarrow (-\infty, 0) \cup (3, +\infty) - \{4, -1\}$$

د) $\sqrt{1 - \log_{\frac{x-1}{x}}}$ $\log_{\frac{x-1}{x}} \leq 1 \Rightarrow x-1 \geq \frac{1}{x} \Rightarrow x \geq \frac{1}{x-1}$

$$I \cap II \Rightarrow D_f = \left[\frac{1}{x-1}, +\infty \right)$$

ه) $\sqrt{1 - \frac{1}{4} \sin^2 x}$ $\frac{1}{4} \sin^2 x \leq 1 \Rightarrow \sin^2 x \leq \frac{4}{1} \Rightarrow \sin x \leq \frac{1}{2}$



$$D_f = \left[k\pi - \frac{\pi}{4}, k\pi + \frac{\pi}{4} \right]$$

