

$$f(x) \rightarrow f(x), f(x) \in \mathbb{R}, f(x) \rightarrow f(x) \in \mathbb{R} \quad 1.$$

$$f(x) \rightarrow f(x) \in \mathbb{R}$$

$$y = \sqrt{x - x^2} \rightsquigarrow \frac{-b}{2a} = \frac{-1}{-2} = \frac{1}{2} \rightsquigarrow \frac{-1}{2} + \frac{1}{2} = \frac{1}{2} \text{ (max)}$$

$$D_f = \sqrt{(-\infty, \frac{1}{2})} \rightarrow [0, \frac{1}{2}]$$

$$f(x) = \frac{x^2 - 1}{x + 1} \rightarrow \frac{x(x+1)(x-1)}{x+1} = x(x-1) = x^2 - x \quad 2.$$

$$x^2 - x = 1 \rightarrow x^2 - x - 1 = 0 \rightarrow (x-1)(x+1) \quad \begin{matrix} x=1 \\ x=-1 \end{matrix}$$

$$a \leq b \leq -1$$

$$\frac{-b}{2a} = \frac{1}{2} \rightarrow 1/2 \in [1, 5] \quad f(a+b) = f\left(\frac{1-1}{2}\right) = f(-1) = 1 + 1 = 2$$

$$y = \sqrt{x^2 + ax + b} \rightsquigarrow \sqrt{(x-1)^2} = x^2 - 1 + 1x - 4x^2 \quad 3.$$

$$\begin{aligned} a \leq -1 &\rightsquigarrow x \leq -1 \rightarrow y \leq -1 \\ b \leq 1 &\rightsquigarrow x \leq 1 \rightarrow y \leq 0 \end{aligned} \quad D_f = [-1, 1]$$

$$y = \left(\frac{x+1}{1-x} \right)^2 \rightsquigarrow D_f = \mathbb{R} - \{1\} \in \mathbb{R}_{y^+} \quad 4.$$

$$y = \frac{ax^2 - 1}{x^2 + b} \rightarrow \frac{x^2 - 5x + 1}{x^2 - 2} \rightarrow x \in \mathbb{R} \quad \frac{-5x + 1}{-2} \geq 0 \rightarrow \frac{-5x + 1}{-2} \geq 0$$

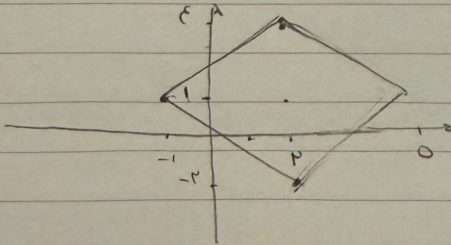
$$\frac{1}{2} \rightarrow a \leq 1 \rightarrow b - 1 \leq 0 \rightarrow b \leq 1 \rightarrow b \leq 1 \rightarrow a + b \leq 1 \rightarrow 1 \leq 2$$

$$I) x \geq 2, y \geq 1 \rightarrow x^2 + y + 1 \leq x^2 + y + 2 \rightarrow x^2 + y + 2 \leq x^2 + y + 2 \quad .A$$

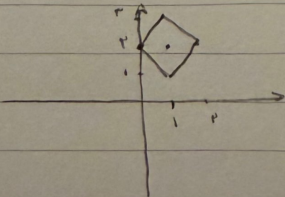
$$II) x \geq 2, y \leq 1 \rightarrow x^2 + y + 1 \leq x^2 + y + 2 \rightarrow x^2 + y + 2 \leq x^2 + y + 2$$

$$III) x \leq 2, y \geq 1 \rightarrow x^2 + y + 1 \leq x^2 + y + 2 \rightarrow x^2 + y + 2 \leq x^2 + y + 2$$

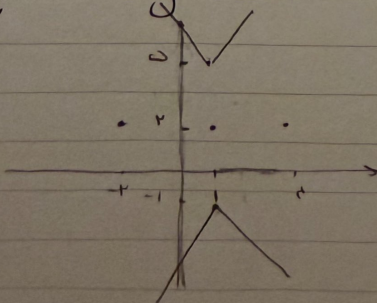
$$IV) x \leq 2, y \leq 1 \rightarrow x^2 + y + 1 \leq x^2 + y + 2 \rightarrow x^2 + y + 2 \leq x^2 + y + 2$$



$$عقده) |x-1| + |y-2| \leq 1 \quad .A$$



$$عقده) |x-1| + |y-2| \leq 3$$



$$y = \frac{1}{2} \pi x + \frac{1}{2} \pi x + b$$

$$\frac{-b}{a}$$

$$x - a x - b$$

$$x + a x + b, (x + a) x + b$$

$$x(x - a) x - b$$

برای اینکه برقرار باشد $a \in \mathbb{R}$ باید است $a \neq \pm 1$

$$\rightarrow a \in \mathbb{R} - \{\pm 1\}$$