

۱۷, ۵

نام و نام خانوادگی ..... کلاس ..... شماره ..... تکلیف شماره ۹ ..... پاسنامه تشریحی

$$n+2 = t \Rightarrow n = t-2 \Rightarrow f(t) = \begin{cases} 3t-2+5 & t \geq 3 \\ 3t-4-1 & t < 3 \end{cases}$$

$$\Rightarrow f(3-n) = \begin{cases} 9-3n-1 & n \geq 3 \\ 12-4n-9 & n < 3 \end{cases}$$

$$\text{و } f(n+1) = \begin{cases} 3n+3-1 & n \geq 3 \\ 3n+4-9 & n < 3 \end{cases} \Rightarrow \begin{cases} \sqrt{1-3n-3n-2} & n \geq 3 \\ -2n+2 & n < 3 \end{cases}$$

غرض

$$1-1n \geq 0 \Rightarrow 1 \geq n \Rightarrow D_f = (-\infty, 1] \checkmark$$

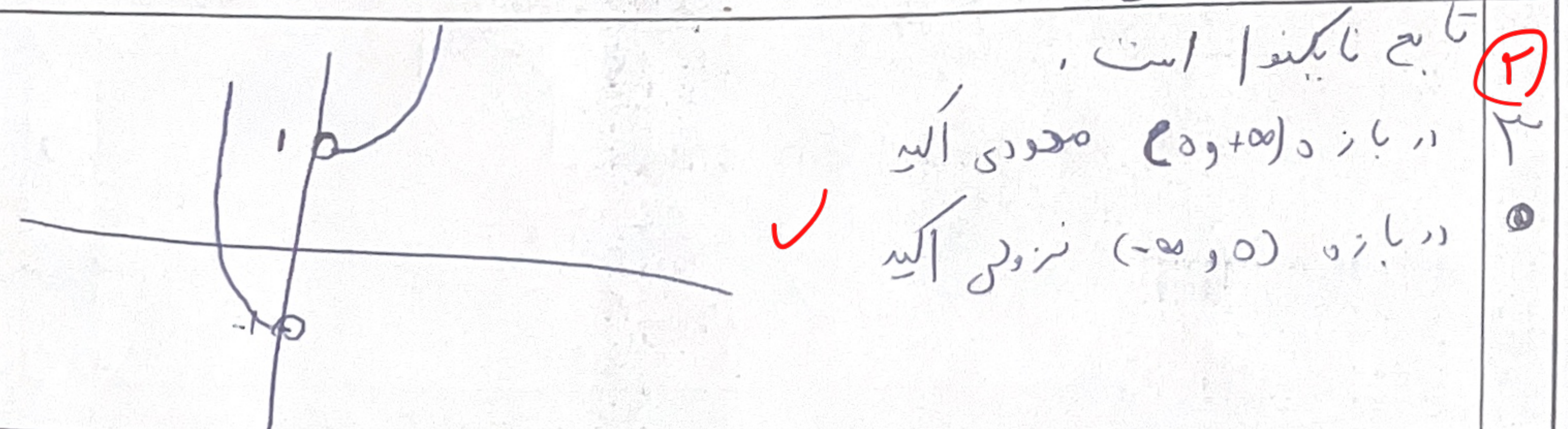
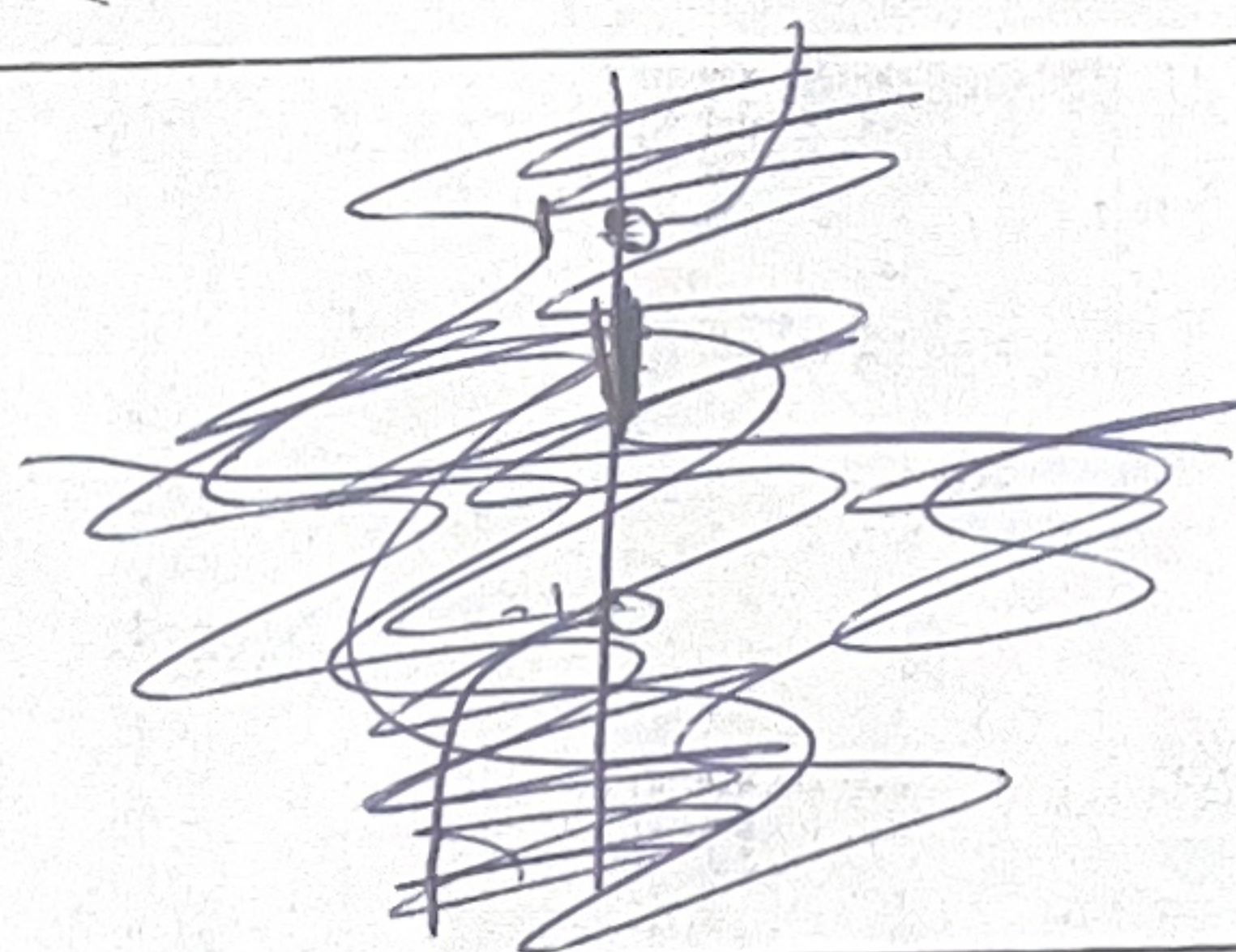
تابع  $f(x)$  یک تابع صعودی است. پس:

$$f(x) < x^3 \Rightarrow (x^3+x)^2 < x^3 \Rightarrow x^3+x < x$$

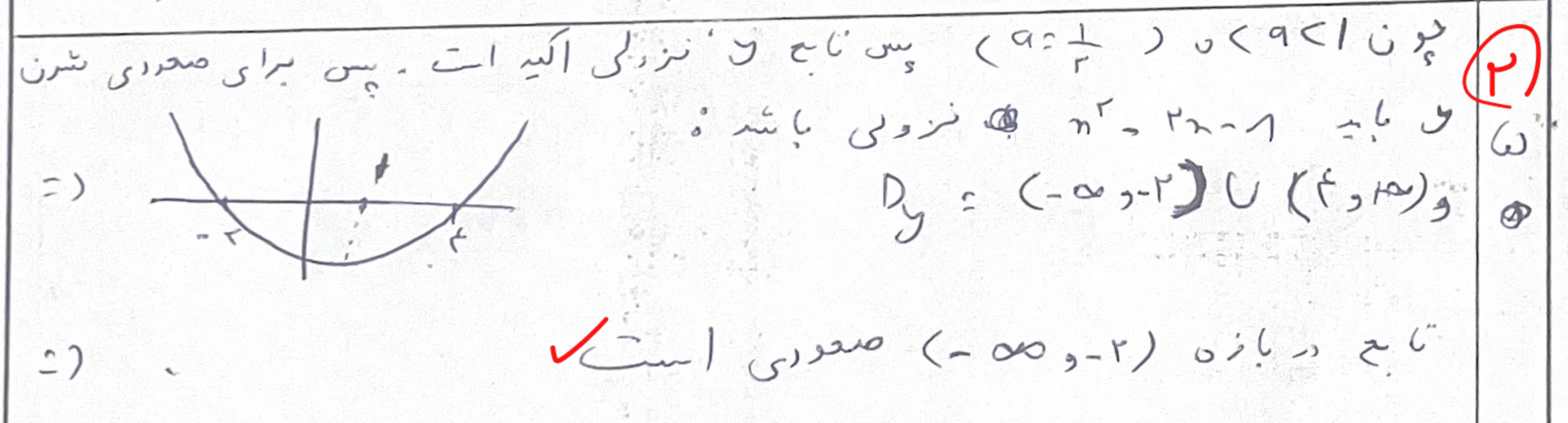
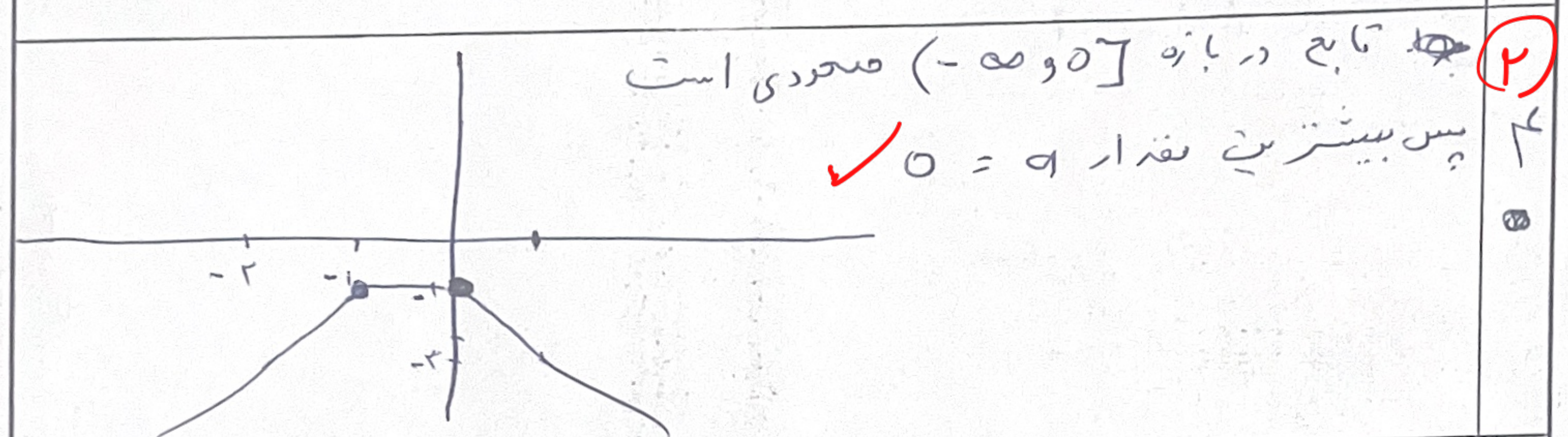
$$\Rightarrow x^3 < 0 \Rightarrow x < 0 \checkmark$$

$$x \times \frac{x^3+1}{x} = x^2+1 : x > 0$$

$$-x \times \frac{x^3+1}{x} = -x^2-1 : x < 0$$



|                              |                                                   |                                                |
|------------------------------|---------------------------------------------------|------------------------------------------------|
| $\frac{2n+1}{-n+n+1} = 2n+1$ | $\frac{2n+1}{-n-n-1} = \frac{2n+1}{-2n-1}$ $= -1$ | $\frac{2n+1}{n-n-1} = \frac{2n+1}{-1} = -2n-1$ |
|------------------------------|---------------------------------------------------|------------------------------------------------|



(۱, ۵)

|                                                                 |                                                     |
|-----------------------------------------------------------------|-----------------------------------------------------|
| $a^2 - 3 \geq 1$<br>$a^2 \geq 4$<br>$a \geq 2$ ✓<br>$a \leq -2$ | $a^2 - 3 > 1$<br>$a^2 > 4$<br>$a > 2$ ✓<br>$a < -2$ |
|-----------------------------------------------------------------|-----------------------------------------------------|

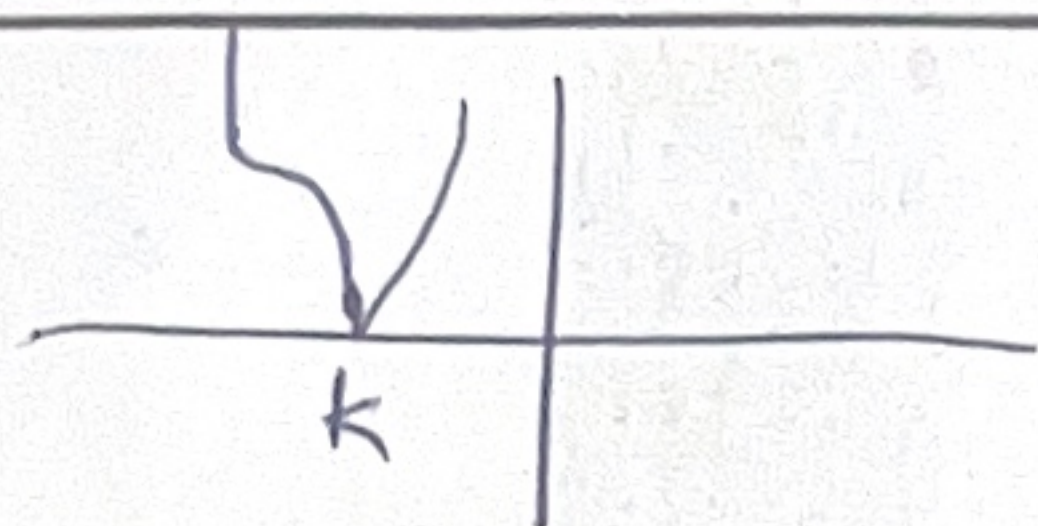
(اند)

تابع:

$(n+3)^3 - 1 = n^3 + 9n^2 + 27n + 27 - 1$

$\Rightarrow a = 9, b = 27, c = 27$

$$|f(n)| :$$



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

$$\Rightarrow n = -3 \Rightarrow k = -2 \quad \checkmark$$

۲

✓

$$f(n) \leq \sqrt{n} \Rightarrow n + \sqrt{n} - 2 \leq \sqrt{n}$$

$$\Rightarrow n - 2 \leq 0 \Rightarrow n \leq 2$$

$$\Rightarrow \{0 \leq n \leq 2\} \quad \text{محل صحیح} \quad \checkmark \quad \{1, 2\}$$

$$D_{f(n)} = [0, 2]$$

$$D_{f \circ f} = [\emptyset, +\infty)$$

۲

✓

$$f(n) \geq 0 \Rightarrow n + \sqrt{n} - 2 \geq 0$$

$$\Rightarrow n + \sqrt{n} \geq 2 \Rightarrow n \geq 1$$

۸

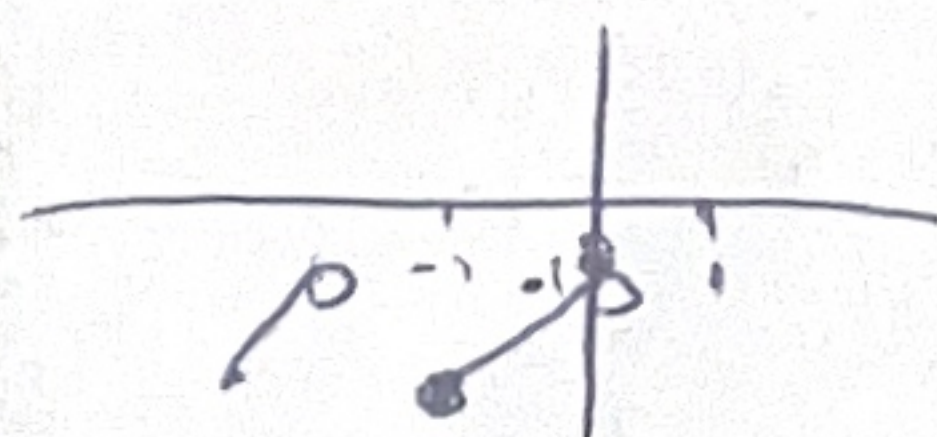
$$\left. \begin{aligned} & \cos n - 1 \geq 0 \Rightarrow \cos n \geq \frac{1}{2} \Rightarrow \cos n \geq \frac{1}{2} \\ & \cos n - 1 \leq 0 \Rightarrow \cos n \leq 1 \Rightarrow \cos n \leq -\frac{1}{2} \end{aligned} \right\} \quad \text{I}$$

$$\text{I} \cap \text{II}: \cos n = \pm \frac{1}{2} \Rightarrow R_f = 0 \Rightarrow b - a = 0 \quad \text{یاسفانه}$$

۵

۹

$$f(n): n - [n] - 2 \Rightarrow$$



$$\Rightarrow R_f = [-2, -1]$$

۲

$$g(-2) = \frac{\frac{1}{2} - 2}{2} = \frac{\frac{1-4}{2}}{2} = \frac{-3/2}{2} = -\frac{3}{4}$$

$$g(-1) = \frac{\frac{1}{2} - 1}{2} = \frac{\frac{1-2}{2}}{2} = \frac{-1/2}{2} = -\frac{1}{4} \quad \Rightarrow R_{g \circ f} = [-\frac{3}{4}, -\frac{1}{4}] \quad \checkmark$$

۳