

$$\sqrt{f(3-x) - f(x+1)}$$

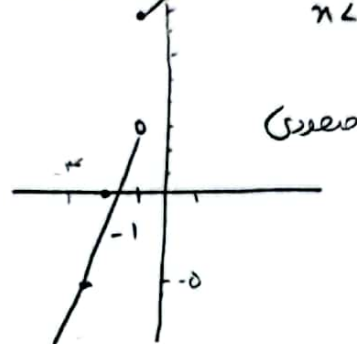
$$f(3-x) \geq f(x+1) \rightarrow 3-x \geq x+1$$

$$2x \leq 2 \quad (x \leq 1)$$

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جدا از هم هستند
تالیف 1

$$f(x+2) = \begin{cases} 3x+0 & x \geq 1 \\ x-1 & x < 1 \end{cases}$$

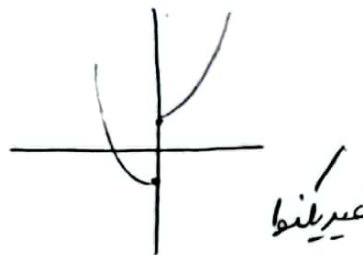
$$f(x) = \begin{cases} 3(x+2)+0 & x+2 \geq 1 \\ f(x+2)-1 & x+2 < 1 \end{cases}$$



$$f(x) = (x^3 + x)^3$$

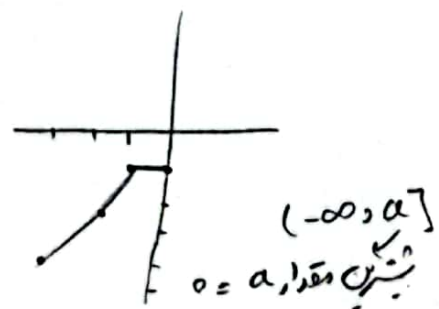
$$f(x) < f(x^3) \quad f(x) < x^3 \quad (x^3 + x)^3 < x^3 \quad x^3 + x < x \quad x^3 < 0 \quad (x < 0)$$

$$y = |x|(x^2 + \frac{1}{x}) \rightarrow \begin{cases} x > 0 & x^3 + 1 \\ x < 0 & -x^3 - 1 \end{cases}$$



$$\frac{2x+1}{|x|-|x+1|} \quad \begin{array}{ccc} -1 & & 0 \\ -x+x+1 & -x-x-1 & x-x-1 \\ 1 & -2x-1 & -1 \end{array}$$

$$\frac{2x+1}{-2x-1} = -1 \quad \frac{2x+1}{-1} = -2x-1$$



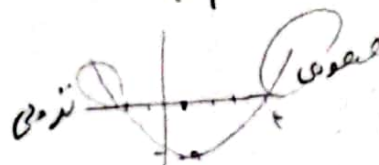
$$\log_{\frac{1}{p}}(x^2 - 2x - 1)$$

$$x^2 - 2x - 1 > 0 \quad (x-2)(x+1) > 0$$

$$\begin{array}{ccc} -2 & & 1 \\ +1 & - & + \end{array}$$

$$x > 2 \quad \log_p \text{ مقرر است } X$$

$$x < -2 \quad x^2 - 2x - 1 > 0 \quad \checkmark$$



تجزیه می شود باقی معصومی ✓

$$x < -2$$

$$(a^2 - 3)x$$



$$a^2 - 3 > 1 \quad a^2 > 4 \quad (الف)$$

$$a > 2 \vee a < -2$$

$$a^2 - 3 \geq 1 \quad a^2 \geq 4 \quad (ب)$$

$$a \geq 2 \vee a \leq -2$$

$$f(x) = x^3 + ax^2 + bx + c$$



$$a = 1$$

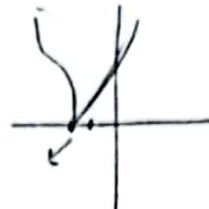
$$a(x+3)^3 - 1$$

$$x^3 + 3x^2 + 4x - 1$$

$$(x+3)^3 - 1 = 0 \quad (x+3)^3 = 1$$

$$x+3 = 1$$

$$x = -2$$



$$(K, +\infty)$$

$$K = -2$$

$$x + \sqrt{x-2}$$

فرض کنیم $x = t^2$ $t \geq 0$



$$f \circ f(x) \leq f(\sqrt{x})$$

$$f(x) \leq \sqrt{x}$$

$$x + \sqrt{x-2} \leq \sqrt{x}$$

$$\begin{cases} x-2 \leq 0 \\ \sqrt{x} \geq 0 \end{cases}$$

$$x \leq 2$$

$$\boxed{x \leq 2}$$

$$\sqrt[3]{9\cos^2 - 1} \quad \sqrt[3]{1 - 9\cos^2}$$

$$0 \leq \cos^2 \leq 1 \quad 0 \leq 9\cos^2 \leq 9 \quad -1 \leq 9\cos^2 - 1 \leq 8 \quad -1 \leq \sqrt[3]{9\cos^2 - 1} \leq 2$$

$$f(t) = \frac{e^t}{t} - \frac{e^{-t}}{t} \quad -1 \leq t \leq 2 \rightarrow \left[-\frac{e}{2}, \frac{e}{2}\right] \quad b-a = \frac{e}{2} + \frac{e}{2} \rightarrow \frac{e}{2}$$

$$0 \leq t < 1 \rightarrow -2 \leq 0 < -1$$

$$F(x) = x - [x+2]$$

$$x - [x] + 2$$

$$g(x) = \frac{x^2 - x^{-2}}{x}$$

$$\frac{x^{-2} - x^2}{x} = -\frac{10}{x}$$

$$\left[-\frac{10}{x}, -\frac{10}{x}\right]$$

$$g \circ f \rightarrow$$

$$\frac{x^{-1} - x^1}{x} = -\frac{2}{x} = -\frac{2}{x}$$