

۱۹, ۲۵

نام و نام خانوادگی پاسخنامه تشریحی تکلیف شماره ۹ ... کلاس ۱۰ ...

$$f(x+r) = \begin{cases} 3x+5 & x \geq 1 \\ 3x-1 & x < 1 \end{cases} \quad x+r \leq \quad f(t) = \begin{cases} 3(t-1)+5 & t \geq 3 \\ 3(t-1)-1 & t < 3 \end{cases} \quad f(x) = \begin{cases} 3x-1 & x \geq 3 \\ 3x-4 & x < 3 \end{cases}$$

$$f(3-x) \xrightarrow{x \geq 3} f(3-x) = 1-3x \quad f(n+1) \xrightarrow{n \geq 3} f(n+1) = 3n+2$$

$$x < 3 \rightarrow f(3-x) = 3-3x \quad x < 3 \rightarrow f(n+1) = 3n-5$$

$$x \geq 3 \rightarrow 1-3n-3x-2 = -3n-2 \quad x < 3 \rightarrow 3-3n-3x+5 = -3n-3x+8$$

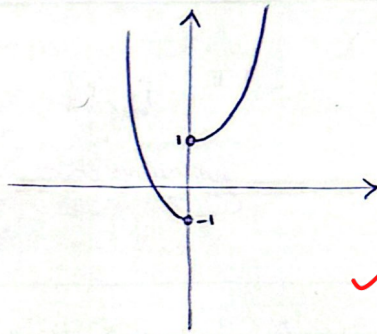
$$\sqrt{-3n+8} \rightarrow \frac{1}{+ \quad -} \quad x \in (-\infty, 1] \text{ (II)} \quad \text{I, II: } (-\infty, 1] \text{ (I)} \quad \checkmark$$

$$f(x) = (x^3+x)^3 \leftarrow \text{الیه صعودی}$$

$$f(f(x)) < f(x^3) \rightarrow f(x) < x^3 \rightarrow (x^3+x)^3 < x^3 \rightarrow x^3+x < x$$

$$x^3 < 0 \rightarrow x < 0 \rightarrow (-\infty, 0) \checkmark$$

$$y = \begin{cases} x^3+1 & x > 0 \\ -x^3-1 & x < 0 \end{cases}$$

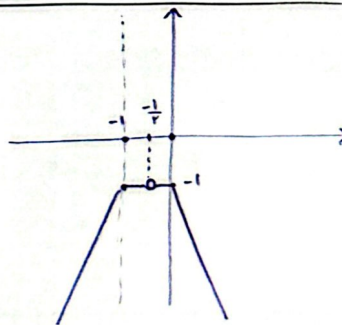


ناشیما $\checkmark$

$$f(x) = \frac{2x+1}{|x|-|x+1|}$$

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

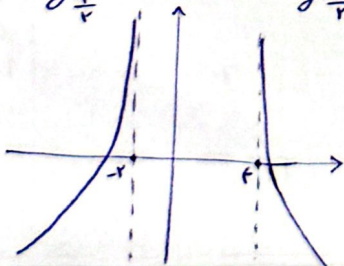
$$= 2x+1 \quad \left(x \neq -\frac{1}{2} \right)$$



$(-\infty, 0]$
صعودی

$$a=0 \checkmark$$

$$y = \log_{\frac{1}{r}}(x^2-2x-1) = \log_{\frac{1}{r}}(x-1)(x+1)$$



$$\rightarrow \text{سبب:} \quad \frac{-2}{+ \quad - \quad +} \quad x \in (-\infty, -1) \cup (1, +\infty)$$

$$\text{الیه صعودی} \rightarrow (-\infty, -1) \checkmark$$

الف) صعودی انداز:

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

$$a^2 - 3 > 1 \quad a^2 > 4 \quad a > 2 \leq a < -2 \quad \checkmark$$

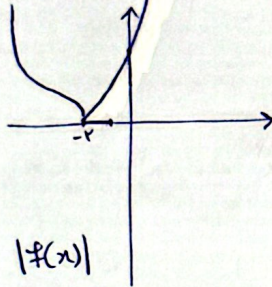
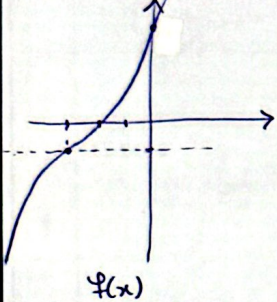
$$a^2 - 3 \geq 1 \quad a^2 \geq 4 \quad a \geq 2, a \leq -2$$

$$a^2 - 3 = 0 \quad a^2 = 3 \quad a = \pm\sqrt{3}$$

$$(-\infty, -2] \cup [2, +\infty) \cup \{\pm\sqrt{3}\} \quad \checkmark$$

ب) اگر چه اعداد صعودی اند، نباید می توانیم تابع ثابت در نظر بگیریم (هم صعودی هم نزولی)

$$f(x) = x^3 + ax^2 + bx + c \leftarrow \text{درجه 3}$$



$(k, +\infty) \leftarrow$ انبساطی
صعودی

$$k = -2 \quad \checkmark$$

$$f(x) = x + \sqrt{x} - 2 \leftarrow \text{انبساطی صعودی} \quad \text{دامنه: } x \geq 0 \quad \textcircled{\text{I}}$$

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

$$x + \sqrt{x} - 2 \leq \sqrt{x} \rightarrow x \leq 2 \quad \textcircled{\text{II}}$$

$$\text{I} \cap \text{II} = [0, 2] \Rightarrow [1, 2] \text{ دو عدد}$$

فصل سوم: شامل سه عدد صحیح $1, 2, 3$ $f(1), f(2), f(3)$ $\rightarrow$ $f(1) = 1, f(2) = 2, f(3) = 3$

$$-1 \leq \cos x \leq 1 \rightarrow 0 \leq \cos^2 x \leq 1 \rightarrow 0 \leq 4 \cos^2 x \leq 4 \rightarrow -1 \leq 4 \cos^2 x - 1 \leq 3$$

$$-1 \leq \sqrt{4 \cos^2 x - 1} \leq 2 \rightarrow -2 \leq \sqrt{1 - 4 \cos^2 x} \leq 1$$

$$r^{-1} - r^1 = -\frac{c}{r}$$

$$r^2 - r^{-2} = \frac{10}{\varepsilon}$$

$$\left. \begin{aligned} r^{-1} - r^1 &= -\frac{c}{r} \\ r^2 - r^{-2} &= \frac{10}{\varepsilon} \end{aligned} \right\} \rightarrow [a, b] = \left[-\frac{3}{r}, \frac{10}{\varepsilon}\right]$$

$$b - a = \frac{10}{\varepsilon} - \left(-\frac{3}{r}\right) = \frac{10}{\varepsilon} + \frac{3}{r} \quad \checkmark$$

$$x = n + r \leftarrow \text{نمایی از } x \text{ در } [r, r+1]$$

$$x + r = n + r + r \rightarrow [x + r] = n + r$$

$$f(n) = n + r - (n + r) = r - r \quad f(n) \in [-r, -1] \quad \textcircled{\text{I}}$$

$$f(n) = -r \rightarrow \frac{r^{-r} - r^r}{r} = -\frac{10}{\lambda}$$

$$f(n) = -1 \rightarrow \frac{r^{-1} - r^1}{r} = -\frac{c}{\varepsilon}$$

$$\left. \begin{aligned} f(n) = -r &\rightarrow \frac{r^{-r} - r^r}{r} = -\frac{10}{\lambda} \\ f(n) = -1 &\rightarrow \frac{r^{-1} - r^1}{r} = -\frac{c}{\varepsilon} \end{aligned} \right\} \rightarrow g \circ f(n) \in \left[-\frac{10}{\lambda}, -\frac{c}{\varepsilon}\right] \quad \checkmark$$