

14, 28

دانشگاه تهران

فرمانی

تلف: ۰۲۱-۸۸۸۸۸۸۸۸

$$f(x+1) + f(x+r) = r x + f(r) \xrightarrow{x=1} r f(1) = f(r) + r n \quad f(r) = r$$

$$f(r) = r a + b = r$$

$$f(1) + f(r) = r \rightarrow a + b + r a + b = r$$

$$r a + b = r$$

$$r a + r b = r$$

$$\begin{matrix} a=1 \\ b=0 \end{matrix}$$

$$\rightarrow f(r) = a r + b$$

$$f(x) = x$$

$$f(x) = \sqrt{x - x^2}$$

$$\frac{-b}{ra} = \frac{-1}{-r} = \frac{1}{r} \xrightarrow{x=\frac{1}{r}} \frac{1}{r} - \frac{1}{r^2} = \frac{1}{r}$$

$$Rf = \sqrt{1 - \infty, \frac{1}{r}} = [0, \frac{1}{r}] \checkmark$$

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

$$f(x) = \frac{x^2 - r x}{x+r}$$

$$Rf = r - \{-r, r\}$$

$$\begin{matrix} a=-r \\ b=r \end{matrix}$$

$$\begin{matrix} x \neq r \\ x+r \neq 0 \\ x \neq -r \end{matrix}$$

$$Rf = \frac{-b}{ra} = \frac{r}{r} = 1 \xrightarrow{x=1} f(x) = -1 \quad Rf = [-1, +\infty) \quad C = -1$$

$$f\left(\frac{a+b}{rc}\right) = f\left(\frac{-r+r}{-r}\right) = f(-1) \quad f(-1) = \text{?} \checkmark$$

$$y = \sqrt{x^2 + a x^2 + b x - 1}$$

$$= \sqrt{x^2 + 4x^2 + 12x - 1} = \sqrt{(x+2)^2} = x+2$$

$$\begin{matrix} a=-4 \\ b=12 \end{matrix}$$

$$[-4, 12]$$

$$\begin{matrix} -4 \leq x \leq 12 \\ -1 \leq x-2 \leq 10 \end{matrix}$$

$$Rf = [-1, 10] \checkmark$$

$$y_1 = \left(\frac{x+1}{1-x}\right)^{\frac{1}{2}}$$

$$\frac{x+1}{1-x} > 0$$

$$\frac{-1}{-1} = \frac{1}{1} = 1$$

$$\begin{matrix} a=1 \\ b=1 \end{matrix}$$

$$a+b=2$$

$$y_2 = \frac{a x^2 - 1}{x^2 + b}$$

$$x^2 = \frac{+b y_2 + 1}{y_2 - a}$$

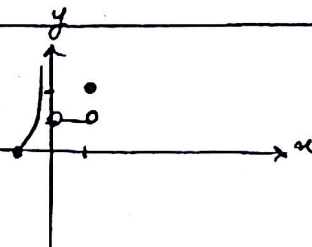
$$\rightarrow y = \sqrt{\frac{b x + 1}{a - x}}$$

$$\frac{-1}{+} = \frac{1}{+} = 1$$

$$y = \frac{[x]}{x} + \frac{|x|}{x}$$

$$\begin{matrix} -1 \leq x < 0 \\ 0 \leq x < 1 \\ x=1 \end{matrix}$$

$$\begin{matrix} [x] = -1 \rightarrow \frac{-1}{x} - 1 \\ [x] = 0 \rightarrow 1 \\ [x] = 1 \rightarrow 2 \end{matrix}$$



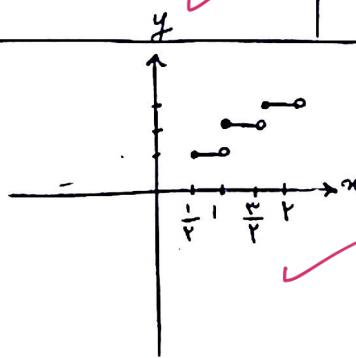
$$y = [x] + \left[x + \frac{1}{r}\right]$$

$$\left[\frac{1}{r}, 2\right]$$

$$\frac{1}{r} \leq x < 1 \rightarrow \textcircled{1}$$

$$1 \leq x < \frac{r}{r} \rightarrow \textcircled{2}$$

$$\frac{r}{r} \leq x < r \rightarrow \textcircled{3}$$



پایه نامه ساده کن

$$\left| \frac{x+1}{ax+3} \right| < 1$$

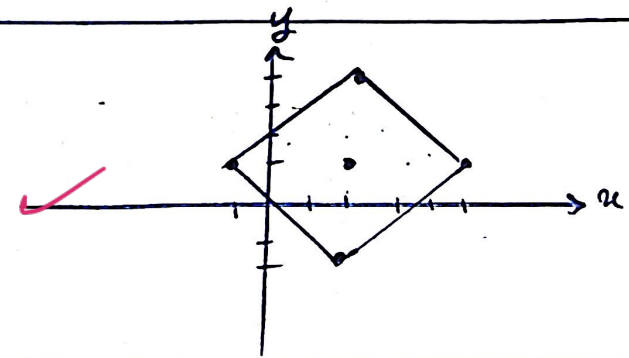
$$-1 < \frac{x+1}{ax+3} < 1$$

if $|c| < |d| \rightarrow (c-d)(c+d) < 0$

$(a+x+2)(x-ax-2) < 0 \rightarrow a < 1 \rightarrow (2x+2)(-2) < 0 \quad x > -2 \quad b < -2 \quad \checkmark$

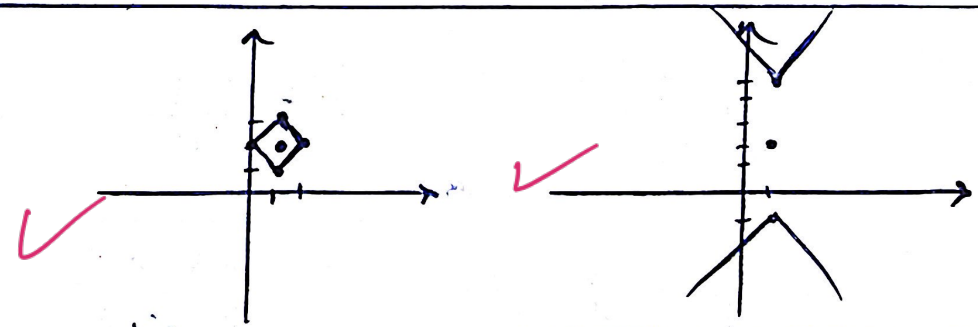
$a < -1 \rightarrow \infty (2x-2) < 0 \quad x < 1 \quad \checkmark$

$y > 1 \quad x > 2 \rightarrow y = -x + 4$
 $y < 1 \quad x > 2 \rightarrow y = x - 4$
 $y > 1 \quad x < 2 \rightarrow |x-2| + |y-1|$
 $y < 1 \quad x < 2 \rightarrow y = x + 2$
 $y < 1 \quad x < 2 \rightarrow y = -x$



$|x-1| + |y-2| = 1$

$|x-1| - |y-2| = -3$
 $|y-2| - |x-1| = 3$



$y = 3x + |ax + b|$

برای اینکه فقط یک خط داشته باشیم باید $a=0$ باشد
و مقدار b هم تأثیری بر برد نخواهد داشت

برای اینکه برد $\emptyset$ نباشد باید b به سبب خطها هم علامت باشد
 $(a+3)(3-a) > 0$

$9 - a^2 > 0 \quad a^2 < 9 \quad -3 < a < 3$