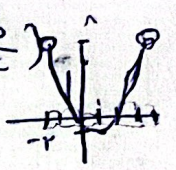


ارزین منویان اور دهم ۱۷

① $f(r_{n+1}) + f(n, r) = r_n + f(r) \xrightarrow{n=1} f(r) + f(r) = r_n + f(r) \quad f_{\text{max}} = 2$ ①

$f(r) = r_n \rightarrow y = \sqrt{f(n) - nr} \xrightarrow{n=1} y = \sqrt{r_n - 1} \rightarrow R_f = [0, +\infty)$
 $\hookrightarrow y = \sqrt{n - nr} \rightarrow R_y = [0, \frac{1}{r}]$

② $f(n) = \frac{n^2 - 1}{n+1} \quad D_f = \mathbb{R} - \{-1\} \quad R_f = [0, +\infty) - \{1\} \quad f(\frac{a+b}{rc})$
 $f(n) = \frac{n(n-1)(n+1)}{n+1} \xrightarrow{n \neq -1} f(n) = n(n-1) \rightarrow f(n) = n^2 - n$
 $-\frac{b}{2a} = \frac{1}{2} = 1$

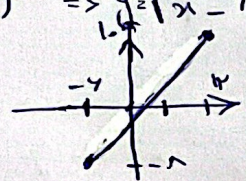


$R_f = [-1, +\infty) - \{1\} \xrightarrow{\text{نیمه جز (نیمه باز)}} P_f = \mathbb{R} - \{-1, 1\} \rightarrow \boxed{a, b = -1, 1} \quad \boxed{c = -1}$

$f(\frac{x}{-1}) = f(-1) = \frac{-1 + 1}{1} = \boxed{0}$ ✓ ②

③ $y = \sqrt[3]{x^3 + ax^2 + bx - 1} \quad D_f = [a, b] \quad R_f = ?$

$y = \sqrt[3]{(n-1)^3} \Rightarrow y = \sqrt[3]{n^3 - 3n^2 + 3n - 1} \rightarrow a = -1 \quad b = 1 \rightarrow D_f = [-1, 1]$
 $y = x - 1$
 $R_f = [-1, 1]$ ✓ ③



④ $y_1 = (\frac{n+1}{1-n})^{\frac{1}{5}} \rightarrow x \neq \pm 1 \quad y_2 = \frac{an^2 - 1}{n^2 + b} \neq 1 \rightarrow \frac{a}{1} = 1 \rightarrow a = 1$ ✓

⑤

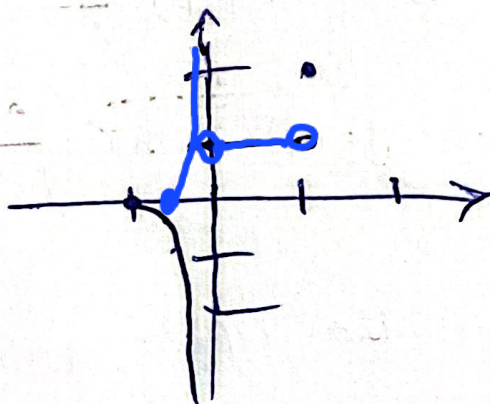
در توان یک یکی پایه نباید منفی باشد
 $a+b = 1 \quad a=1 \quad b=0 \quad D_f = [-1, 1]$

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

$$-1 \leq x < 0 \rightarrow y = \frac{-1}{x} + (-1) = -\frac{1-x}{x}$$

$$0 \leq x < 1 \rightarrow y = 0 + 1$$

$$x = 1 \quad y = 2$$



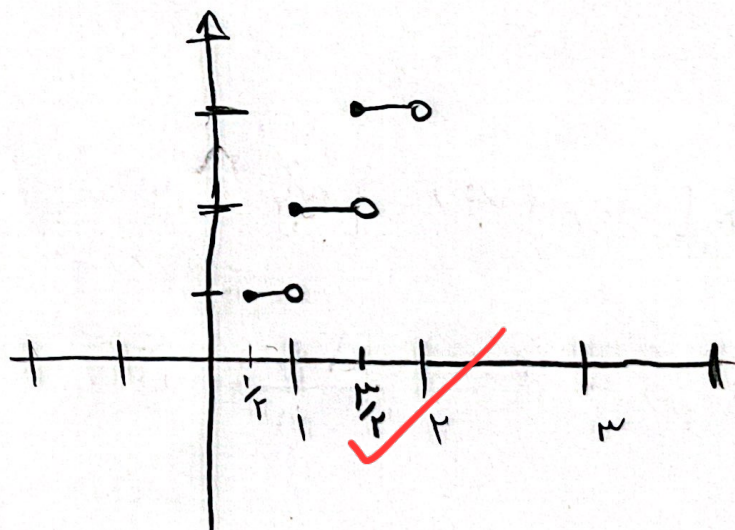
1,8

$$\textcircled{b} \quad y = [x] + [x + \frac{1}{r}] \quad (\frac{1}{r}, r)$$

$$\frac{1}{r} \leq x < 1 \rightarrow y = 0 + 1 = 1$$

$$1 \leq x < \frac{r}{r} \rightarrow y = 1 + 1 = 2$$

$$\frac{r}{r} \leq x < r \rightarrow y = 1 + r = r$$



(1, 2, 3)

5

$$\textcircled{v)} \quad \left| \frac{n+1}{an+r} \right| < 1$$

$$(n+1)^r < (an+r)^r$$

$$n^r + rn + 1 < a^r n^r + 9an + 9$$

$$(1-a^r)n^r + (r-9a)n - 8 < 0$$

$$\Delta > 0 \rightarrow (r-9a)^2 + 32(1-a^r) > 0$$

$$32a^r - 16a + 1 + 32 - 32a^r > 0$$

$$16a^r - 16a + 33 > 0$$

$$a^r - 4a + 9 > 0$$

$$(a-r)^r > 0 \rightarrow \boxed{a \neq r}$$

$$a \neq 1 \rightarrow -\infty < n < \infty$$

$$b \in \mathbb{R} \setminus (-r, +\infty)$$

$$a = -1 \rightarrow \wedge n - \wedge < 0$$

$$n < 1 \quad (-\infty, 1) \quad \alpha$$

$$n+r > 0$$

$$n-1 \neq 0$$

$$\lambda = 1 - (-r) = r$$

$$\textcircled{r}$$

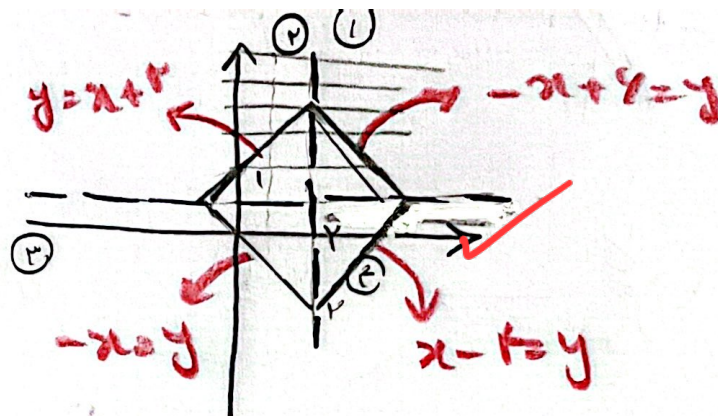
$$\textcircled{1} \quad |x-2| + |y-1| = 3$$

$$\textcircled{1} \rightarrow \begin{aligned} x-2+y-1 &= 3 \\ y &= -x+6 \end{aligned}$$

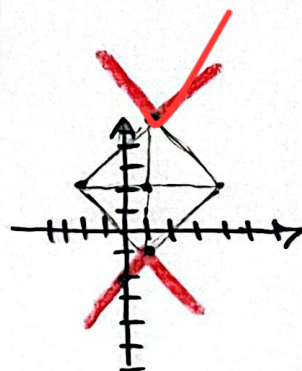
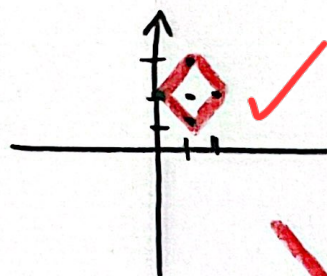
$$\begin{aligned} \textcircled{2} \quad -(x-2) + (y-1) &= 3 \\ -x+2+y-1 &= 3 \\ y &= x+2 \end{aligned}$$

$$\textcircled{9} \quad \text{الف) } |x-1| + |y-2| = 1$$

$$\text{ب) } |x-1| - |y-2| = -3$$



$$\begin{aligned} \textcircled{4} \quad -(x-2) - (y-1) &= 3 \\ -x+2-y+1 &= 3 \\ -x &= y \end{aligned}$$

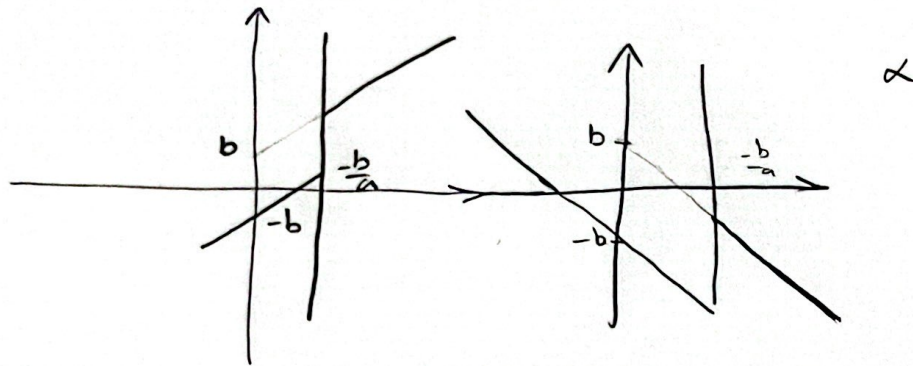


$$\begin{aligned} \textcircled{5} \quad (x-2) - (y-1) &= 3 \\ x-2-y+1 &= 3 \\ x-1 &= y \end{aligned}$$

$$(10) y = rx + |ax + b|$$

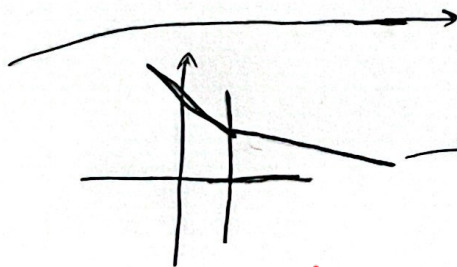
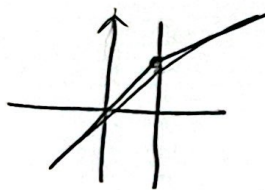
$$y = rx - ax - b \quad \begin{array}{c} -\frac{b}{a} \\ \hline y = rx + ax + b \end{array}$$

$$y = x(r-a) - b \quad y = x(r+a) + b$$



$$-\frac{b}{a}(r-a) - b = -\frac{b}{a}(r+a) + b$$

$$-\frac{rb}{a} + b - b = -\frac{rb}{a} - b + b \rightarrow \text{در محل ریشه قدر مطلق ۲ تابع برابر می شود}$$



$$\begin{array}{l} r+a > 0 \quad -r < a \\ r-a > 0 \quad r > a \end{array} \rightarrow -r < a < r$$

$$\begin{array}{l} r+a < 0 \quad a < -r \\ r-a < 0 \quad r < a \end{array} \rightarrow \emptyset$$

$$\rightarrow a = (-r, r)$$

