

$$y = \sqrt{\frac{r+m}{n+b}} + a$$

$$(r, +\infty)$$

نقطة (1,0) مخرج (1,0)

$$r+a=0$$

$$a=-r$$

$$\frac{r+m+r+a(n+b)}{n+b} = \frac{r+m+r+an+ab}{n+b} = \frac{r(r+a)+r+ab}{n+b}$$

$$a+b=0 \xrightarrow{n=r} r+b=0$$

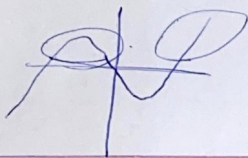
$$b=-r$$

$$\text{الف) } y = \sqrt{n-m}$$

$$D_f = [-1, 0] \cup [1, +\infty)$$

$$n^2 - n \geq 0$$

$$n(n-1) \geq 0 \rightarrow n(n-1)(n+1) \geq 0$$



$$\text{ب) } y = \frac{1}{\sqrt{|n|-1}}$$

$$\sqrt{|n|-1} > 0 \rightarrow |n| > 1 \rightarrow n > 1$$

$$D = (-\infty, -1) \cup (1, +\infty)$$

$$\text{الف) } y = \sqrt{\frac{1}{|n|-a}}$$

$$|n| \neq [a]$$

$$D_f = \mathbb{R} \setminus W$$

$$\text{ب) } \sqrt{a} + \sqrt{b} = 9$$

$$\sqrt{b} = 9 - \sqrt{a}$$

$$a \leq 9$$

$$\sqrt{a} \geq 0$$

$$9 - \sqrt{a} \geq 0$$

$$9 \geq \sqrt{a} \rightarrow 81 \geq a \rightarrow a \leq 81$$

$$a \geq 0 \rightarrow D_f = [0, 81]$$

$$y = \frac{1}{[rn - \frac{1}{r}] + [rn + \frac{r}{r}]}$$

$$[rn - \frac{1}{r}] + [rn + \frac{r}{r}] + r > 0$$

$$r[rn - \frac{1}{r}] > -r \rightarrow [rn - \frac{1}{r}] > -1$$

$$rn - \frac{1}{r} \geq 0 \rightarrow rn \geq \frac{1}{r} \rightarrow n \geq \frac{1}{r} \rightarrow D_f = [\frac{1}{r}, +\infty)$$

$$y = \sqrt{1 - \log(rn-a)}$$

$$rn-a > 0 \rightarrow rn > a \rightarrow n > \frac{a}{r}$$

$$rn-a \leq 10 \rightarrow n \leq \frac{10+a}{r}$$

$$\frac{a}{r} < n \leq \frac{10+a}{r}$$

$$C-b=0$$

$$1 - \log(rn-a) > 0$$

$$\log(rn-a) < 1$$

$$C-b = \frac{10+a}{r} - \frac{a}{r} = \frac{10}{r} = \Delta$$

در مسائل (1) و (2) به روش زیر

(الف) $y'' - 2xy' = 2x - 1 \Rightarrow y'' = 2xy' + 2x - 1$ تابع هست (1)

$$\begin{aligned} y_1'' &= 2xy_1' + 2x - 1 \\ y_2'' &= 2xy_2' + 2x - 1 \end{aligned} \Rightarrow y_1'' = y_2'' \xrightarrow{\sqrt{}} y_1 = y_2$$

$\frac{1}{x} \cos y = y \cos x \xrightarrow{\frac{d}{dx} \left(\frac{1}{x} \cos y \right) = 0} \text{تابع نیست}$

(ج) $\frac{x+y}{x} = \sqrt{xy} \quad x, y > 0 \rightarrow x+y - 2\sqrt{xy} = 0 \rightarrow (\sqrt{x} - \sqrt{y})^2 = 0 \rightarrow \sqrt{x} = \sqrt{y} \rightarrow x = y$ تابع هست

(د) $xy^2 + 2x - y^2 - 2y = 0 \rightarrow x(y^2 + 2) - y(y^2 + 2) = 0$

$(y^2 + 2)(x - y) = 0 \rightarrow x = y$ تابع هست
 (4) $\frac{d}{dx} \left(\frac{y^2 + 2}{x - y} \right) = 0$

$f(x) = \begin{cases} 2x^2 - 6 & |x-1| \geq 2 \\ a+2x & 0 \leq x \leq 2 \end{cases}$

$x-1 \geq 2 \rightarrow x \geq 3 \rightarrow 2x^2 - 6$
 $-x+1 \geq -2 \rightarrow -1 \geq x \rightarrow 2x^2 - 6$
 $x \leq -1$

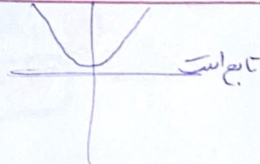
$f(x) = \begin{cases} 2x^2 - 6 & x \geq 3 \\ a+2x & 0 \leq x \leq 2 \\ 2x^2 - 6 & x \leq -1 \end{cases}$

$x = 3 \rightarrow a - 6 = a + 2$
 $a + 6 = 12$

سوال 3

حواصین و حبابه جابجایی

(الف) $|y| + x^2 = xy \Rightarrow \begin{cases} y > 0 \rightarrow y = x^2 \\ y < 0 \rightarrow -y = x^2 \\ y = \frac{x^2}{x} \end{cases}$



سوال 2

$[y] + [2x] = 1$

$x = 0, 1 \rightarrow [2] = 0 \rightarrow [y] = 0 \rightarrow y \in [1, 2]$ تابع نیست

$f(x) = \sqrt{a-bx-x^2} \quad D_f = [a, b] \quad a \neq 0 \quad b \in \mathbb{Z}$

$S = a + b = \frac{b}{a} = \frac{-(-b)}{-1} = -b \quad a + b = -b \rightarrow a = -2b \rightarrow a = -2(-1) = 2$

$P = ab = \frac{c}{a} = \frac{a}{-1} = -a \quad ab = -a \rightarrow b = -1 \quad a + b = 2 - 1 = 1$

$y = \frac{2}{\sqrt{ax^2 + bx + c}}$

$D_f = (-\infty, 2]$

$3a + c - 2|b|$

$\frac{2}{+}$

$c = -2b$

$3a + c - 2|b| = -2b + 2b = 6$

$b \leq 0 \rightarrow -2|b| = +2b$

اگر $a=0$ حواصین و حبابه جابجایی داشته باشد تغییر علامت ندارد