

الف) $y^2 - 2xy = 2n - 1$ تابع هست $\checkmark \rightarrow \begin{cases} y_1^2 = 2n^2 + 2n - 1 \\ y_2^2 = 2n^2 + 2n - 1 \end{cases} \rightarrow y_1^2 = y_2^2 \rightarrow y_1 = y_2$

ب) $x \cos y = y \cos x$

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

د) $xy^2 + 2n - y^3 - 2y = 0 \checkmark$ تابع هست $\Rightarrow \begin{cases} xy^2 - y^3 = 2y - 2n \\ 2n - 2y = 0 \end{cases} \Rightarrow \begin{cases} xy^2 - y^3 = 2y - 2n \\ 2n = 2y \end{cases} \Rightarrow \begin{cases} xy^2 - y^3 = 2y - 2y \\ 2n = 2y \end{cases} \Rightarrow \begin{cases} xy^2 - y^3 = 0 \\ n = y \end{cases} \checkmark$ تابع هست

الف) $|y| + x^2 = 2y \rightarrow$ تابع هست

ب) $[y] + [x] = 1 \rightarrow$ $\begin{cases} x=1 \\ y=\{0, \frac{1}{2}, \frac{1}{2}, \dots\} \end{cases}$ تابع نیست

$f(x) = \begin{cases} 2x^2 - b & |x-1| \geq 2 \\ a+2x & 0 \leq x \leq 3 \end{cases} \xrightarrow{x=3} 11-b \Rightarrow 11-b = a+4$
 $\xrightarrow{x=3} a+4 \Rightarrow 11-4 = a+b = 12$

$f(x) = \sqrt{a-bx-x^2} \rightarrow$ $\frac{b}{1+} \frac{a}{-1+}$

$\Delta > 0 \rightarrow b^2 - 4a(-1) = b^2 + 4a > 0$

$\circledast (n-a)(n-b) = -x^2 + (a+b)x - ab \rightarrow \begin{cases} -ab = a \\ a+b = -b \end{cases} \rightarrow a = -2b$
 $\Rightarrow -(-2b)b = -2b \rightarrow 2b^2 + 2b = 0 \rightarrow 2b(b+1) = 0$
 $\Rightarrow b = \begin{cases} -1 \\ 0 \end{cases}$ $\rightarrow a = 2$ $a+b = 2+(-1) = 1$

$ax^2 + bx + c > 0$ $\frac{+}{-} \frac{+}{-} \rightarrow \begin{cases} a=0 \\ b < 0 \end{cases} \xrightarrow{b=2} 2b+c=0$
 $\Rightarrow c = -2b$ $3a+c-3|b| = -2b-3(-b) = b$

$$\frac{rx+r}{n+b} + a \geq 0 \rightarrow \frac{rx+r}{n+b} + \frac{an+ab}{n+b} \geq 0 \rightarrow \frac{(r+a)n + ab+r}{n+b} \geq 0$$

$$D = (r, +\infty) \rightarrow -\frac{r}{+} \Rightarrow \begin{cases} r+a=0 \rightarrow a=-r \\ n+b=(r)+b=0 \rightarrow b=-r \end{cases}$$

$$\Rightarrow \frac{1}{n-r} \geq 0$$

$$\text{الف) } n^3 - n \geq 0 \rightarrow n(n-1)(n+1) \geq 0 \quad \begin{array}{c} -1 \quad 0 \quad 1 \\ \hline - \quad + \quad - \quad + \end{array}$$

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

$$\text{ب) } y = \frac{1}{\sqrt{|x|-1}} \rightarrow |x|-1 > 0 \rightarrow |x| > 1 \begin{cases} x > 1 \\ x < -1 \end{cases}$$

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

$$\text{الف) } |x| - [x] \neq 0 \rightarrow |x| \neq [x] \rightarrow D_y = \mathbb{R} - \{0, \pm 1\}$$

$$\text{ب) } \sqrt{x} + \sqrt{y} = 9 \rightarrow \sqrt{y} = 9 - \sqrt{x} \Rightarrow \begin{cases} x \geq 0 \\ 9 - \sqrt{x} \geq 0 \rightarrow 0 \leq x \leq 81 \end{cases}$$

$$D_R = [0, 81]$$

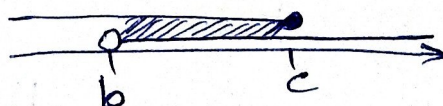
$$\left[rx - \frac{1}{r}\right] + \left[rx + \frac{r}{r}\right] > 0 \rightarrow \left[rx - \frac{1}{r}\right] + \left[rx + r - \frac{1}{r}\right] > 0 \rightarrow r \left[rx - \frac{1}{r}\right] > -r$$

$$\rightarrow \left[rx - \frac{1}{r}\right] > -1 \rightarrow rx - \frac{1}{r} \geq 0 \rightarrow rx \geq \frac{1}{r} \rightarrow x \geq \frac{1}{2}$$

$$1 - \sqrt{rx-a} \geq 0 \rightarrow \sqrt{rx-a} \leq 1 \rightarrow rx-a \leq 1 \rightarrow x \leq \frac{1+a}{r}$$

$$rx-a > 0 \rightarrow x > \frac{a}{r}$$

المطلوب



$$\Rightarrow \frac{a}{r} < x \leq \frac{1+a}{r} \rightarrow b < x \leq c \Rightarrow \begin{cases} b = \frac{a}{r} \\ c = \frac{1+a}{r} = \delta + \frac{a}{r} \end{cases} \Rightarrow c - b = \delta + \frac{a}{r} - \frac{a}{r} = \delta$$