

از این متلبات

19

الف) $y^2 = x^2 + x - 1 \Rightarrow y_1 = \sqrt{x^2 + x - 1}$
 $y_2 = \sqrt{x^2 + x - 1} \Rightarrow y_1 = y_2 \Rightarrow$ تابع هست ✓

(2)

ب) $x \cos y = y \cos x \xrightarrow{x=y} x \cos x = x \cos x \Rightarrow y = \{k\pi + \pi/2 \mid k \in \mathbb{Z}\} \Rightarrow$ تابع نیست ✓

ج) $2 + y = \sqrt{2y} \Rightarrow 2 - \sqrt{2y} + y = 0 \Rightarrow (\sqrt{2} - \sqrt{y})^2 = 0$

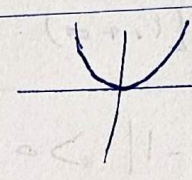
$\Rightarrow \sqrt{2} = \sqrt{y} \Rightarrow y = 2$ تابع هست ✓

د) $y'(2-y) + 1(2-y) = 0 \Rightarrow (y'+1)(2-y) = 0$

$\Rightarrow y'+1 = 0 \Rightarrow y' = -1 \times$

$2-y = 0 \Rightarrow 2 = y \checkmark$

تابع هست ✓

الف) $|y| + x^2 = xy$ $y = \begin{cases} x^2 & y \geq 0 \\ \frac{x^2}{2} & y < 0 \end{cases}$  تابع هست ✓

(2)

ب) $(y) + [x] = 1 \xrightarrow{x=0} [y] = 1 \Rightarrow 1 \leq y < 2 \checkmark$ تابع نیست ✓

$f(x) = \begin{cases} x^2 - 6 & x \geq 2 \\ x^2 + a & 0 \leq x < 2 \\ x^2 - 6 & x \leq -1 \end{cases} \Rightarrow f(x) = 1 \wedge -6$
 $\Rightarrow f(x) = 4 + a$
 $\Rightarrow a + b = 12 \checkmark$

(2)

$S = 2 + 2x = -\frac{b}{a} = -6 = a + b \Rightarrow a > -2b \Rightarrow a = 2 \checkmark$

(2)

$P = 3, x = \frac{c}{a} = -a = ab \Rightarrow a(b+1) = 0 \Rightarrow a = 0 \times$
 $b = -1 \checkmark$

$a + b = 2 + (-1) = 1 \checkmark$

$$y = a = 0 \Rightarrow y = b \neq 0 \xrightarrow{2 \cdot 2} yb + c = 0 \Rightarrow yb = -c$$

(r) - 2

$$\frac{2}{y} \neq \frac{1}{b} \Rightarrow b < 0$$

$$yb + c = 0 \Rightarrow 0 + (-b) + yb = b \checkmark$$

$$y = \sqrt{\frac{ya + y + a + b}{a + b}} \Rightarrow y = \sqrt{\frac{(y+a) + (a+b+y)}{a+b}}$$

(r) - 4

$$yb = 0 \Rightarrow b = -1 \checkmark$$

$$ya = 0 \Rightarrow a = -1 \checkmark$$

$$\text{الف) } y = \sqrt{2^x - 2} = \sqrt{2(2^{x-1} - 1)}$$

$$\begin{array}{c} -1 & 0 & 1 \\ | & | & | \\ - & + & - & + \end{array}$$

(r)

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

$$\text{ب) } y = \frac{1}{\sqrt{|x| - 1}} \Rightarrow |x - 1| > 0 \Rightarrow |x| > 1 \Rightarrow x > 1 \vee x < -1$$

$$\Rightarrow D_f = (-\infty, -1) \cup (1, +\infty) \checkmark$$

$$\text{ج) } y = \sqrt{\frac{1}{|x| - [x]}} \Rightarrow |x| - [x] \neq 0 \Rightarrow |x| \neq [x]$$

(1) - 1

$$\Rightarrow \begin{cases} x \neq [x] & x \geq 0 \rightarrow x \notin \mathbb{W} \\ -x \neq [x] & x < 0 \rightarrow x \in \mathbb{R} \end{cases}$$

$$\Rightarrow D_f = \mathbb{R} - \mathbb{W} \checkmark$$

قسمت ب ب

$$y = \frac{1}{\sqrt{[x + \frac{x}{y} - 1] + [x + \frac{x}{y}]}} \Rightarrow [x + \frac{x}{y} - 1] + [x + \frac{x}{y}] > 0$$

(r)

$$\Rightarrow [x + \frac{x}{y}] + [x + \frac{x}{y}] - 1 > 0$$

$$\Rightarrow 2[x + \frac{x}{y}] > 1 \Rightarrow [x + \frac{x}{y}] > \frac{1}{2} \Rightarrow x + \frac{x}{y} \geq 1 \Rightarrow x \geq \frac{1}{2} \Rightarrow D_f = [\frac{1}{2}, +\infty) \checkmark$$

$$x^2 - a > 0 \Rightarrow x > \frac{a}{x}$$

$$1 - \log^{(x^2-a)} \geq 0 \Rightarrow \log^{(x^2-a)} \leq 1 \Rightarrow x^2 - a \leq 1 \Rightarrow x \leq \sqrt{1+a}$$

(r)

$$\Rightarrow \frac{a}{x} \leq x < \sqrt{1+a} \Rightarrow R = \left(\frac{a}{x}, \sqrt{1+a}\right] = (b, c] \Rightarrow b = \frac{a}{x} \quad c = \sqrt{1+a}$$

~~⊗~~

$$\Rightarrow c - b = \sqrt{1+a} - \frac{a}{x} = d \quad \checkmark$$

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

$\cap \rightarrow [0, 81]$