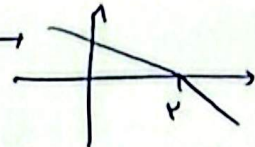


نام و نام خانوادگی پاسخنامه تشریحی تکلیف شماره کلاس ۲۰

$\left. \begin{aligned} y_1^3 &= 2x^2 + 2x - 1 \\ y_2^3 &= 2x^2 + 2x - 1 \end{aligned} \right\} y_1^3 = y_2^3 \Rightarrow y_1 = y_2$ تابع هست ✓	$\begin{aligned} \text{الف) } y &= 0 \rightarrow x = \frac{\pi}{4} \rightarrow \frac{\pi}{4} \text{ (داده)} \\ &\rightarrow \text{داده } y = 0 \Rightarrow y = \frac{\pi}{4} \text{ و } \frac{3\pi}{4}, \dots \end{aligned}$ تابع نیست ✓	۱
$\begin{aligned} \text{ب) } x \cdot y &= 2\sqrt{xy} \rightarrow x \cdot y - 2\sqrt{xy} = 0 \\ &\rightarrow (\sqrt{x} - \sqrt{y})^2 = 0 \rightarrow \sqrt{x} = \sqrt{y} \Rightarrow x = y \end{aligned}$ تابع است ✓	$\begin{aligned} \text{د) } x(y^2 + 2) - y(y^2 + 2) &= 0 \\ (y^2 + 2)(x - y) &= 0 \Rightarrow x = y \end{aligned}$ تابع است ✓	۱
$\begin{aligned} \text{الف) } y > 0 &\rightarrow y = x^2 \\ y < 0 &\rightarrow y = \frac{x^2}{x} \end{aligned}$ تابع نیست ✓	$\text{ب) } \text{تکلفض} \rightarrow x = 1 \Rightarrow y = 0 \rightarrow 0 \cdot 1 = 0$ تابع نیست ✓	۲
$f(x) = \begin{cases} 2x^2 - b & x-1 > 2 \\ a + 2x & 0 \leq x \leq 3 \end{cases}$ $x=2 \rightarrow 2 \cdot 4 - b = a + 4$ $\rightarrow 11 - b = a + 4 \rightarrow a + b = 11 - 4 \rightarrow a + b = 7 \quad \checkmark$		۳
$P(x) = \sqrt{a - bx - x^2} \quad D = [b, a]$ $-x^2 - bx + a \geq 0 \rightarrow -(x-b)(x-a) = -x^2 + (a+b)x - ab$ $\rightarrow a + b = -b \rightarrow a = -2b \quad \text{و} \quad ab = a \xrightarrow{a \neq 0} b = -1 \rightarrow a = 2$ $a + b = 2 - 1 = 1 \quad \checkmark$		۴

$a = 0 \rightarrow bx + c = 0 \rightarrow$

 $\boxed{b/2}$

$x = 2 \rightarrow y = 0 \rightarrow 2b + c = 0 \rightarrow c = -2b$

$\frac{2}{3}x + c = 3|b|$

$$c - 2b + 3b = b \quad \checkmark$$

۵

$$y = \sqrt{\frac{rx+r}{x+b}} + a \quad D = (r, +\infty)$$

$$\frac{rx+r}{x+b} + a \geq 0 \rightarrow \frac{rx+rx+ax+ba}{x+b} \geq 0 \rightarrow \frac{(r+a)x + r+ab}{x+b} \geq 0$$

$$\rightarrow \frac{r}{x+b} \geq 0 \Rightarrow x = -b \rightarrow -b = r \rightarrow b = -r \quad \checkmark$$

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

$$x^2 - x \geq 0 \rightarrow x(x-1) \geq 0$$

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

$$D = [-1, 0] \cup [1, +\infty) \quad \checkmark$$

$$2) y = \frac{1}{\sqrt{|x|-1}}$$

$$|x|-1 > 0 \rightarrow |x| > 1 \rightarrow \begin{array}{l} x > 1 \\ x < -1 \end{array}$$

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

$$1) y = \sqrt[3]{\frac{1}{|x|-[x]}}$$

$$|x| - [x] \neq 0 \quad \checkmark$$

$$D = \mathbb{R} - \mathbb{Z} \quad \checkmark$$

$$2) \sqrt{x} + \sqrt{y} = 9$$

$$\sqrt{x} = 9 - \sqrt{y} \rightarrow (9 - \sqrt{y})^2 = x \rightarrow x = 81 - 18\sqrt{y} + y$$

$$x \geq 0 \rightarrow 81 - 18\sqrt{y} + y \geq 0$$

$$\sqrt{y} = -\sqrt{y} + 9 \rightarrow -\sqrt{y} + 9 \geq 0$$

$$\rightarrow \sqrt{y} \leq 9 \rightarrow 0 \leq y \leq 81$$

$$D = [0, 81] \quad \checkmark$$

$$y = \frac{1}{\sqrt{[rx+\frac{1}{r}] + [rx+\frac{r}{r}]}} \rightarrow [rx+\frac{1}{r}] + [rx+\frac{r}{r}] \geq 0 \rightarrow [rx+\frac{1}{r}-1] + [rx+\frac{1}{r}+1]$$

$$\rightarrow [rx+\frac{1}{r}]-1 + [rx+\frac{1}{r}]+1 \geq 0 \rightarrow 2[rx+\frac{1}{r}] \geq 0 \rightarrow [rx+\frac{1}{r}] \geq 0$$

$$\rightarrow rx+\frac{1}{r} \geq 0 \rightarrow rx \geq -\frac{1}{r} \rightarrow x \geq -\frac{1}{r} \quad \checkmark$$

$$y = \sqrt{1 - \log(r(x-a))} \quad D = (b, c)$$

$$1) r(x-a) > 0 \rightarrow x > \frac{a}{r}$$

$$2) 1 - \log(r(x-a)) \geq 0 \rightarrow 1 \geq \log(r(x-a)) \rightarrow 1 \geq r(x-a) \rightarrow \frac{1+a}{r} \geq x$$

$$\rightarrow b = \frac{a}{r}, c = \frac{1+a}{r} \rightarrow c-b = \frac{1+a}{r} - \frac{a}{r} = \frac{1}{r} = d \quad \checkmark$$