

Subject:

Year:

Month:

Day:

سایه شنبه روز دهم شماره تالیف (۱) ۲۰

الف) $y^3 - 2x^2 + 2x - 1 \rightarrow y^3 = 2x^2 + 2x - 1$

$y^3 = 2x^2 + 2x - 1$

$y^3 = 2x^2 + 2x - 1 \rightarrow y^3 = y^3 \neq y_1 + y_2$ ✓

تابع است

ب) $x \cos y = y \cos x \rightarrow x = \frac{\pi}{2}$ ✓ تابع نیست

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

تابع است

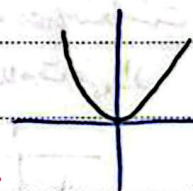
د) $xy^2 + 2x - y^3 - 2y = 0 \rightarrow x(y^2 + 2) - y(y^2 + 2) = 0$

$(y^2 + 2)(x - y) = 0 \rightarrow x = y$ ✓
تابع است

الف) $|y| + x^2 = 2y$ $y > 0 \rightarrow y = x^2$

$y < 0 \rightarrow 2y = x^2$

$33x y = \frac{x^2}{2}$ ✗



تابع است

ب) $[y] + [x] = 1$

$x = 0.1 \rightarrow [x] = 0 \rightarrow [y] = 1 \rightarrow y \in (1, 2]$ ✓
تابع نیست

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

$x-1 \geq 2 \rightarrow x \geq 3 \rightarrow 2x^2 - b$

$-x+1 \geq -2 \rightarrow -1 \geq x \rightarrow 2x^2 - b$
 $2x-1$

$$f(x) = \begin{cases} x^2 - b & x \geq x \\ a + x & 0 \leq x < x \\ x^2 - b & x < -1 \end{cases} \quad x = x \rightarrow 1 - b \geq a + x$$

$$\boxed{x = a + b} \quad \checkmark$$

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

$$S = a + b = \frac{-b}{a} = \frac{-(-b)}{-1} = \boxed{-b} \quad (r)$$

$$P = ab = \frac{C}{a} = \frac{a}{-1} = \boxed{-a} \quad (r)$$

$$a + b = -b \rightarrow a = -x \rightarrow a = -x(-1) = \boxed{+x} \quad \checkmark$$

$$ab = -a \rightarrow \boxed{b = -1} \quad \checkmark \quad a + b = x - 1 = \boxed{1} \quad \checkmark$$

$$y = \frac{x}{\sqrt{ax^2 + bx + c}} \quad Df = (-\infty, x) \quad x a + c - x|b| \quad (a)$$

$$\sqrt{ax^2 + bx + c}$$

این عبارت همیشه مثبت است
علامت غیر دارد

این عبارت
همیشه مثبت است

$$\sqrt{x^2 b + c} > 0$$

$$x a + c - x|b| = -x b + x b = \boxed{+b} \quad \checkmark \quad x b + c = 0 \rightarrow \boxed{x b = c} \quad \checkmark$$

$$b < 0 \rightarrow -x|b| = +x b$$

$$y = \sqrt{\frac{x^2 + x}{x + b}} + a \quad (x, +\infty) \quad b = ? \quad (r) \quad (y)$$

$$\frac{x^2 + x + a(x + b)}{x + b} = \frac{x^2 + x + ax + ab}{x + b} = \frac{x(x + a) + x + ab}{x + b}$$

$$x + b = x = x \rightarrow x + b = 0 \rightarrow b = -x \quad \checkmark$$

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$$\text{الف) } y = \sqrt{2^x - x}$$

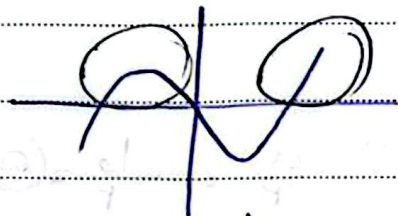
$$D = [-1, 0] \cup [1, +\infty)$$

(✓)

$$2^x - x \geq 0$$

$$-\infty (-\infty) (-\infty) = -\infty$$

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



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

$$\sqrt{|x|-1} > 0 \rightarrow |x|-1 > 0 \rightarrow |x| > 1 \rightarrow \begin{matrix} x > 1 \\ x < -1 \end{matrix}$$

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

$$\text{ج) } y = \sqrt[3]{\frac{1}{|x|-2}}$$

$$|x| \neq [2]$$

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

(Λ)

$$\text{ب) } \sqrt{x} + \sqrt{y} \geq 4$$

$$x \geq 0 \rightarrow I$$

$$\sqrt{y} \geq 4 - \sqrt{x}$$

$$4 - \sqrt{x} \geq 0$$

$$4 \geq \sqrt{x} \rightarrow -16 \leq x \leq 16 \quad II$$

$$I \cap II \rightarrow D_f = [0, 16]$$

$$y = \frac{1}{\left[x_2 - \frac{1}{x}\right] + \left[x_2 + \frac{x}{x}\right]}$$

$$\left[x_2 + \frac{1}{x}\right] + \left[x_2 - \frac{1}{x}\right] + x > 0$$

$$x\left[x_2 - \frac{1}{x}\right] > -x$$

$$\rightarrow \left[x_2 - \frac{1}{x}\right] > -1$$

$$x_2 - \frac{1}{x} \geq 0 \rightarrow x_2 \geq \frac{1}{x} \rightarrow x \geq \frac{1}{x} \rightarrow D_f = \left[\frac{1}{x}, +\infty\right)$$

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$$\sqrt{1 - \log(P_n - a)} \quad \text{by } (b, c]$$

(r) (10)

$$P_n - a > 0 \longrightarrow P_n > a \longrightarrow n > \frac{a}{r}$$

$$P_n - a < 1 \longrightarrow n < \frac{1+a}{r}$$

$$1 - \log P_n - a > 0 \longrightarrow \log P_n - a < 1$$

$$\frac{a}{r} \leq n \leq \frac{1+a}{r}$$

$\underbrace{\quad}_b \quad \underbrace{\quad}_c$

$$c - b = \frac{1+a}{r} - \frac{a}{r} = \frac{1}{r} \quad (a) \checkmark$$