

① تابع هست $y_1^3 = 2x^2 + 2x - 1$ $y_2^3 = y_1^3 \Rightarrow y_1 = y_2$
 $y_1^3 = 2x^2 + 2x - 1$

ب) $x = \frac{\pi}{4} \rightarrow \frac{\pi}{4} \cos y = 0 \Rightarrow \cos y = 0$
 $\Rightarrow y = \frac{\pi}{2}, \frac{3\pi}{2}, \frac{5\pi}{2}, \dots$ تابع نیست

ج) $x \cdot y = 2\sqrt{xy} \rightarrow x \cdot y - 2\sqrt{xy} = 0 \rightarrow (\sqrt{x} - \sqrt{y})^2 = 0$
 $\Rightarrow \sqrt{x} = \sqrt{y} \Rightarrow x = y$ تابع هست

د) $x(y^2 + 2) - y(y^2 + 2) = 0$
 $(y^2 + 2)(x - y) = 0 \Rightarrow x = y$ تابع هست
 > 0

②
 الف) $y > 0 \rightarrow y = x^2$ تابع هست
 $y < 0 \rightarrow y = \frac{x^2}{3}$ تابع هست
 مثبت یا منفی پس جواب ندارد

ب) $0 < y < 1 \Rightarrow [y] = 0 \Rightarrow x = 1$

③
 $x-1 > 2 \quad x > 3$
 $x-1 < -2 \quad x \leq -3$
 $0 \leq x \leq 2 \rightarrow 2x + a$
 $2x^2 - b$
 $x = 3 \rightarrow 11 - b = 6 + a$
 $a + b = 12$

④ $x \neq 0 \rightarrow a - b^2 - b^2 = 0 \rightarrow a = 2b^2$

$x \neq 0 \rightarrow a - ab - a^2 = 0 \quad a(1 - b - a) = 0 \quad a \neq 0 \Rightarrow a + b = 1$

Arman

$$ax^2 + bx + c = (x-2)^2 = x^2 - 4x + 4 \Rightarrow a=1$$

$$b = -4$$

$$3a + c - 3|b| = 3 + 4 - 12 = -5$$

$$c = 4$$

$$-5 = b - 1$$

$$x+b \neq 0 \Rightarrow b = -2$$

$$\text{انف) } x^3 - x \geq 0 \quad x(x-1)(x+1) \geq 0 \quad \begin{array}{ccc} -1 & 0 & 1 \\ - & + & - & + & - \end{array}$$

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

$$\text{ب) } |x| - 1 > 0 \quad |x| > 1 \Rightarrow x > 1 \text{ و } x < -1$$

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

$$\text{انف) } |x| - \{x\} \neq 0 \Rightarrow D = \mathbb{R} - \mathbb{N}$$

$$\text{ب) } D = [0, +\infty)$$

$$\left[2x - \frac{1}{x}\right] + \left[2x + \frac{3}{x}\right] + 2 - 2 = \left[2x - \frac{1}{x}\right] + \left[2x - \frac{1}{x}\right] + 2$$

$$\Rightarrow 2\left[2x - \frac{1}{x}\right] + 2 > 0 \Rightarrow 2\left[2x - \frac{1}{x}\right] > -2 \quad \left[2x - \frac{1}{x}\right] > -1$$

$$\Rightarrow 2x - \frac{1}{x} > -1 \Rightarrow x > \frac{1}{x} \Rightarrow D = \left[\frac{1}{x}, +\infty\right)$$

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

(1)

$$1 - \log(r(x-a)) \rightarrow 1 > r(x-a) \rightarrow x < \frac{1+a}{r} \quad (2)$$

(2)

$$(b, c] \rightarrow \left(\frac{a}{r}, \frac{1+a}{r} \right] \rightarrow c - b = \frac{1+a}{r} - \frac{a}{r} = \frac{1}{r} = d$$