

الف $y^3 - 2x^2 = 2x - 1 \rightarrow y^3 = 2x^2 + 2x - 1 \rightarrow x_1 = 2x^2 \rightarrow y_1^3 = y_2^3 \rightarrow y_1 = y_2$ است $\checkmark$ (1,5)

مثال تصف

ب) $x = \frac{\pi}{4} \rightarrow y = \left\{ \frac{\pi}{4}, \frac{\pi}{2}, \dots \right\} \rightarrow$ باقیست

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

$x = y \rightarrow y = x$ است $\checkmark$

د) $xy^2 + 2x - y^3 - 2y = 0 \rightarrow y^3 + 2y - 2y^2 - 2x = 0 \rightarrow y(y^2 + 2) - 2(y^2 + 1) = 0 \rightarrow y = 2$ است $\checkmark$

$|x-1| \geq 2 \rightarrow x-1 \geq 2 \rightarrow x \geq 3$ یا $x-1 \leq -2 \rightarrow x \leq -1$ (2-2)

$x \geq 3$ یا $x \leq -1$ $2(-1)^2 - b = a + 2(-1) \rightarrow 2 - b = a - 2 \rightarrow a + b = 4$ $\checkmark$

ه) $x^2 \neq 0 \rightarrow \frac{b}{-b+a} = \frac{a}{-b+a} \rightarrow b+a = \frac{-(-b)}{-1} = -b \rightarrow ab = -a-b = -1$ (2-3)

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

و) $DC = (-\infty, 2) \rightarrow ax^2 + bx + c$ $a=0, b < 0, -\frac{c}{b} = 2 \rightarrow c = -2b$ (2-4)

$3a + (-3|b|) = 3(0) + (-2b) - 3(-b) = b$ $\checkmark$

ز) $|x| \neq [2] \rightarrow DF = \mathbb{R} \setminus (-\infty, 0)$ $\checkmark$ (2-5)

ح) $f(x) = \sqrt{x} + \sqrt{y} = 9 \rightarrow x_{min} = 0 \rightarrow x_{max} = 81 \rightarrow x \in [0, 81] \rightarrow DF = [0, 81]$ $\checkmark$

ط) الف) $f(x) = \sqrt{\log_{10} x - 1}$ $\log_{10} x - 1 \geq 0 \rightarrow \log_{10} x \geq 1 \rightarrow x \geq 10$ $\checkmark$

$\log_{10} x - 1 \leq x^0 \rightarrow x \leq \frac{1}{x} \rightarrow x^2 \leq 1 \rightarrow x \leq 1$ $\checkmark$

ب) $f(x) = \log \frac{1}{4+|x|-|x|} \rightarrow 4+|x|-|x| > 0 \rightarrow \sqrt{|x|} = 6 \rightarrow -x^2 + x + 4 > 0$

$x^2 - x - 4 < 0 \rightarrow \frac{-(-1) \pm \sqrt{1+16}}{2} = \frac{1 \pm \sqrt{17}}{2} \rightarrow x \in \left(\frac{1-\sqrt{17}}{2}, \frac{1+\sqrt{17}}{2} \right)$ $\checkmark$

$x \neq 0$ $\log_{10} x < 3$ $\checkmark$

$DF = (-3, 3) \setminus \{0\}$ $\checkmark$

$$\frac{\mu x + \mu + ax + ab}{x+b} > 0 \quad \frac{x(\mu+a) + \mu + ab}{x+b} > 0$$

(2) - 1

$$\mu + b = 0 \rightarrow \text{موجب، مثبت}$$

$$b = -\mu \quad \text{و چون } \mu \text{ مثبت است} \rightarrow \mu + a = 0 \quad a = -\mu$$

(2) - 1

$$\frac{\mu(1 + \mu x + \mu x^2 + \mu x + 1)}{((\mu x + 1)^\mu)^\mu} = \frac{\mu(\mu x + 1)^\mu}{(\mu x + 1)^\mu} = \frac{\mu}{(\mu x + 1)}$$

(2) - 1

$$Df \Rightarrow \mu x + 1 \neq 0 \quad \mu x \neq -1 \quad x \neq -\frac{1}{\mu} \quad Df = \mathbb{R} - \left\{-\frac{1}{\mu}\right\}$$

$$1 - \log(\mu x - a) > 0 \quad 1 > \log_{10} \mu x - a \quad 10 > \mu x - a \quad \frac{10+a}{\mu} > x$$

(2) - 10

$$\mu x - a > 0 \quad x > \frac{a}{\mu} \quad \frac{a}{\mu} = b \quad \frac{10+a}{\mu} = c$$

$$\frac{10+a}{\mu} - \frac{a}{\mu} = \frac{10}{\mu} = c \quad \checkmark$$