

* تکلیف: تمرینات ۱-۲، ۵، ۶

الف) $y^3 - 2m^2 = 2m - 1 \rightarrow \begin{cases} y_1^3 - 2m_1^2 = 2m_1 - 1 \\ y_2^3 - 2m_2^2 = 2m_2 - 1 \end{cases} \xrightarrow{m_1 = m_2} y_1^3 = y_2^3 \rightarrow y_1 = y_2$ (تابع است) ①

ب) $m \cos y = y \cos m \rightarrow m = \frac{\pi}{2} \rightarrow \frac{\pi}{2} \cos y = 0 \rightarrow y \rightarrow \frac{\pi}{2}$ (تابع نیست)

ج) $\frac{m+y}{2} = \sqrt{my} \rightarrow m+y - 2\sqrt{my} = 0 \rightarrow (\sqrt{m} - \sqrt{y})^2 = 0 \rightarrow \sqrt{m} = \sqrt{y} \rightarrow m = y$ (تابع است)

د) $ny^2 + 2m - y^3 - 2y = 0 \rightarrow n(y^2 + 2) - y(y^2 + 2) \rightarrow (y^2 + 2)(n - y) = 0 \rightarrow y^2 + 2 \rightarrow$ عبارت غیر صفر $\rightarrow n = y$ (تابع است)

الف) $|y| + m^2 = 2y \rightarrow \begin{cases} y > 0 : y = m^2 \\ y < 0 : 3y = m^2 \end{cases} \rightarrow$ (تابع نیست) ②

ب) $[y] + [x] = 1 \xrightarrow{\text{مقادیر صحیح}} x = 0 \rightarrow [y] = 1 \rightarrow 0 < y < 1$ (تابع نیست)

برای تابع $f(m) = \begin{cases} 2m^2 - b & m \geq 3 \\ a + 2m & 0 < m < 3 \\ 2m^2 - b & m \leq -1 \end{cases} \xrightarrow{m=3} 11 - b = a + 6 \rightarrow a + b = 12$ ③

ب) $a, b \rightarrow s = a + b = -b \rightarrow a = -2b, p = ab = -a \xrightarrow{a \neq 0} b = -1 \rightarrow a = 2 \rightarrow a + b = 1$ ④

الف) $a = 0 \rightarrow$ چون a و b و c صحیح هستند $m = 2, y = 0 \rightarrow a = 2b + c \rightarrow c = -2b \rightarrow 3a + c - 3|b| = -2b - 3(-b) = b$ ⑤

ب) $y = \sqrt{\frac{2m+2+am+ab}{am+ab}} = \sqrt{\frac{m(2+a)+2+ab}{am+ab}} \rightarrow a = -3$ (چون عبارت زیر رادیکال منفی است) ⑥

$\rightarrow \sqrt{\frac{2-3b}{-3m-3b}} \xrightarrow{\frac{2}{-1}=2} -4 - 3b = 0 \rightarrow b = -\frac{4}{3}$

الف) $\sqrt{x^3 - m} \rightarrow m^3 - m \geq 0 \rightarrow m(m^2 - 1) \geq 0 \rightarrow \begin{matrix} -1 & 0 & 1 \\ - & + & - & + \end{matrix} \rightarrow D_y = [-1, 0] \cup [1, +\infty)$ ⑦

ب) $\frac{1}{\sqrt{|m|-1}} \rightarrow |m|-1 > 0 \rightarrow |m| > 1 \rightarrow m > 1 \rightarrow D_y = R - [-1, 1]$ ⑧

$$\text{الف) } y = \sqrt{\frac{1}{|n| - [n]}} \rightarrow |n| \neq [n] \rightarrow D_y \subset \mathbb{R} - \mathbb{N} \quad \textcircled{A}$$

$$\text{ب) } \sqrt{n} + \sqrt{y} = 9 \rightarrow \textcircled{1} n \geq 0, \textcircled{2} \sqrt{y} = 9 - \sqrt{n} \rightarrow 9 - \sqrt{n} \geq 0 \rightarrow$$

$$\sqrt{n} \leq 9 \rightarrow n \leq 81 \rightarrow D_y = [0, 81]$$

$$y = \frac{1}{\sqrt{[r_m - \frac{1}{r}] + [r_m + \frac{r}{r}]}} \quad \textcircled{9}$$

$$[r_m - \frac{1}{r}] + [r_m - \frac{1}{r}] + r > 0 \rightarrow$$

$$r[r_m - \frac{1}{r}] > -r \rightarrow [r_m - \frac{1}{r}] > -1 \rightarrow$$

$$r_m - \frac{1}{r} \geq 0 \rightarrow r_m \geq \frac{1}{r} \rightarrow n \geq \frac{1}{r} \rightarrow D_y = [\frac{1}{r}, +\infty)$$

$$\textcircled{1} r_m > a \rightarrow n > \frac{a}{r} \rightarrow \frac{a}{r} = b, \log^{(r_m - a)} \leq 1 \rightarrow \textcircled{10}$$

$$r_m - a \leq 10 \rightarrow n \leq \frac{10 + a}{r} \rightarrow c = \frac{10 + a}{r} \rightarrow c - b = \frac{10 + a}{r} - \frac{a}{r} \rightarrow$$

$$\underline{c - b = 10}$$