

$$A \times B - B^Y = ?$$

$$A \times B = \{(1, y), (1, z), (x, y), (x, z), (y, y), (y, z)\} \quad B^Y = \{(y, y), (y, z), (z, y), (z, z)\}$$

$$A \times B - B^r = \{(1, r), (1, r)\}$$

الف) $f(x) = \{(3, m^2), (2, 1), (m, 4), (3, m+2), (-3, m), (-2, m)\}$

$$m^Y = m + Y \begin{cases} \rightarrow m = Y \Rightarrow (Y, 1), (m, \xi) \times \\ \rightarrow m = -1 \Rightarrow (\bar{y}, \bar{y}) \end{cases}$$

راه حل؟ (۱ غره)

ب) $g(x) = \{(3, n^2), (2, 1), (m, 4), (n, m^2), (-2, m), (-1, 3)\}$ = ازای جمیع مقادیر =

$$f(x) = \begin{cases} x^r - 1 & x \leq 1 \\ ax + b & 1 \leq x \leq r \\ x^r & x \geq r \end{cases}$$

$$+a+b-a-b=a=\wedge$$

$$\Rightarrow b = -1 \quad \text{✓} \quad \textcircled{2}$$

$$a \times b = -92$$

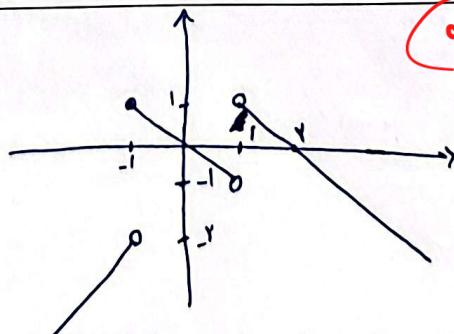
$$\begin{array}{l} x^1 - 1 \xrightarrow{x=1} 1 - 1 = 0 \\ ax + b \xrightarrow{x=1} a + b \end{array} \Rightarrow a + b = 0$$

$$ax+b \xrightarrow{x=y} ya+b \quad \Rightarrow ya+b=1$$

$$f(x) = \begin{cases} 2x-3 & x \geq K \\ 2-3x & x \leq K \end{cases}$$

$$YX^{-1} = L^{-1}X \Rightarrow \Delta X^{-1} = L \Rightarrow \Delta X = V \Rightarrow X = \frac{V}{\phi}$$

$$f(x) = \begin{cases} -x+1 & x > 1 \\ -x & -1 \leq x \leq 1 \\ x-1 & x < -1 \end{cases}$$



$$D_f = \mathbb{R} - \{1\}$$

$$R_f = (-\infty, 1]$$

الف) $2y^3 + x^3 + 1 = 0 \Rightarrow y^3 = -\frac{1}{2}x^3 - \frac{1}{2} \xrightarrow{x^3 = y^3} y_1 = y_2 \Rightarrow y_1 = y_2 \Rightarrow$ تابع است (۲)

ب) $x^3 + (y^3 - 2x - 12y + 10) = 0 \Rightarrow (x^3 - 2x + 1) + (y^3 - 12y + 9) = 0 \Rightarrow (x-1)^3 + (y-3)^3 = 0$
 جمع صفر شده $\rightarrow \begin{cases} x-1=0 \Rightarrow x=1 \\ y-3=0 \Rightarrow y=3 \end{cases} \left(\frac{1}{3}\right) \checkmark$ (۲) تابع است

الف) $x \sin y = y \sin x \xrightarrow{x=0} \sin y = y \cdot 1 \rightarrow$ تابع نیست (۲)
 به ازای $x=0$ عبارت بسط را محاسبه می شود

ب) $\sqrt{\frac{x}{y}} + \sqrt{\frac{y}{x}} = 2 \xrightarrow{\text{توان ۲}} \frac{x}{y} + \frac{y}{x} + 2 = 4 \Rightarrow \frac{x}{y} + \frac{y}{x} = 2 \Rightarrow \frac{x^2 + y^2}{xy} = 2$
 $\Rightarrow x^2 + y^2 = 2xy \Rightarrow x^2 - 2xy + y^2 = 0 \Rightarrow (x-y)^2 = 0 \Rightarrow x=y$ تابع است (۲)

الف) $y = \sqrt{\frac{x-1}{x-3}} + \sqrt{\frac{2-x}{x}}$ (۲)
 $\frac{x-1}{x-3} \geq 0 \rightarrow \frac{1}{x-3} \rightarrow (-\infty, 1] \cup (3, +\infty)$
 $\frac{2-x}{x} \geq 0 \rightarrow \frac{2}{x} \rightarrow (0, 2]$ (۲)
 $D_f = (0, 2]$ (۲)

ب) $\sqrt{x} + \sqrt{y-1} = \sqrt{3} \Rightarrow \sqrt{y-1} = \sqrt{3} - \sqrt{x}$ (۲)
 $x \geq 0$ (I)
 $\sqrt{3} - \sqrt{x} \geq 0 \Rightarrow \sqrt{x} \leq \sqrt{3} \Rightarrow x \leq 3$ (II)
 $(I) \cap (II) \Rightarrow D_f = [0, 3]$ (۲)

الف) $y = \frac{\sqrt{x^2 - 7x + 4}}{\sqrt{x - 10x + 14}}$ (۲)
 $x^2 - 7x + 4 \geq 0 \Rightarrow (x-4)(x-1) \geq 0 \rightarrow \frac{1}{x-4} \rightarrow (-\infty, 1] \cup (4, +\infty)$
 $x^2 - 10x + 14 \geq 0 \Rightarrow (x-1)(x-2) \geq 0 \rightarrow \frac{1}{x-2} \rightarrow (-\infty, 1] \cup (2, +\infty)$
 $(I) \cap (II) \Rightarrow D_f = (-\infty, 1] \cup (2, 4)$ (۲)

ب) $y = \frac{\sqrt{x^2 - 7x + 4}}{\sqrt{x^2 - 10x + 14}} \Rightarrow \frac{x^2 - 7x + 4}{x^2 - 10x + 14} \geq 0 \Rightarrow \frac{(x-4)(x-1)}{(x-2)(x-8)} \geq 0$ (۲)
(۱, ۲, ۴, ۸)

الف) $y = \frac{\sqrt{2x^2 - 5x + 3}}{\sqrt{3x^2 - 7x + 4}}$ (۲)
 $2x^2 - 5x + 3 \geq 0 \Rightarrow (2x-3)(x-1) \geq 0 \rightarrow \frac{1}{x-1} \rightarrow (-\infty, 1] \cup [\frac{3}{2}, +\infty)$
 $3x^2 - 7x + 4 \geq 0 \Rightarrow (3x-4)(x-1) \geq 0 \rightarrow \frac{1}{x-1} \rightarrow (-\infty, 1] \cup [\frac{4}{3}, +\infty)$
 $D_f = (-\infty, 1] \cup [\frac{4}{3}, +\infty)$ (۲)

ب) $y = \frac{\sqrt{2x^2 - 5x + 3}}{\sqrt{3x^2 - 7x + 4}} \rightarrow \frac{2x^2 - 5x + 3}{3x^2 - 7x + 4} \geq 0 \Rightarrow \frac{(2x-3)(x-1)}{(3x-4)(x-1)} \geq 0$ (۲)

۹ ب) $\frac{1}{x-1} + \frac{2}{x-3} + \frac{4}{x-5} + \frac{8}{x-7} \rightarrow D_f = (-\infty, 1] \cup (2, 4] \cup (8, +\infty)$ (۲)

۱۰ ب) $\frac{1}{x-1} + \frac{2}{x-3} + \frac{4}{x-5} + \frac{8}{x-7} \rightarrow D_f = (-\infty, 1] \cup (1, \frac{4}{3}) \cup [\frac{4}{3}, +\infty)$ (۲)