

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

$$A \times B = \{(1,2), (1,3), (2,2), (2,3), (3,2), (3,3)\} \quad B^Y = \{(2,2), (2,3), (3,2), (3,3)\}$$

$$A \times B - B^Y = \{(1,2), (1,3)\}$$

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

$$m^2 = m+2 \rightarrow m=2 \Rightarrow (2,1), (m,4) \times$$

$$\rightarrow m=-1 \Rightarrow \text{قانون}$$

ب) $g(x) = \{(3, m^2), (2, 1), (m, 4), (3, m+2), (-3, m), (-2, 3)\}$ به ازای هیچ مقادیری

$$f(x) = \begin{cases} x^2 - 1 & x \leq 1 \\ ax + b & 1 \leq x \leq 2 \\ x^3 & x \geq 2 \end{cases}$$

$$2a + b - a - b = a = 1$$

$$\Rightarrow b = -1$$

$$ax + b = -94$$

$$x^2 - 1 \xrightarrow{x=1} 1 - 1 = 0 \Rightarrow a + b = 0$$

$$ax + b \xrightarrow{x=2} a + b \Rightarrow$$

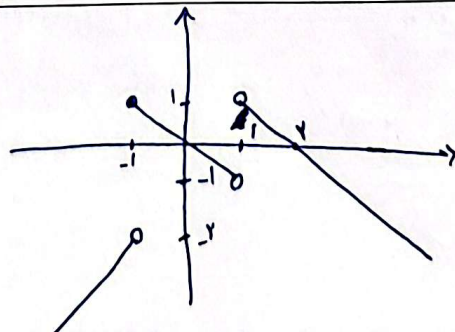
$$ax + b \xrightarrow{x=2} 2a + b$$

$$x^3 \xrightarrow{x=2} 2^3 = 8 \Rightarrow 2a + b = 8$$

$$f(x) = \begin{cases} 2x - 3 & x \geq K \\ 4 - 2x & x \leq K \end{cases}$$

$$2x - 3 = 4 - 2x \Rightarrow 4x - 3 = 4 \Rightarrow 4x = 7 \Rightarrow x = \frac{7}{4}$$

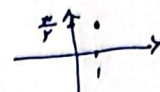
$$f(x) = \begin{cases} -x + 2 & x > 1 \\ -x & -1 \leq x \leq 1 \\ x - 1 & x < -1 \end{cases}$$



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

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

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

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

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

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

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

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

الف) $y = \frac{\sqrt{x^2 - 7x + 6}}{\sqrt{x - 10x + 14}}$ $x^2 - 7x + 6 \geq 0 \Rightarrow (x-6)(x-1) \geq 0 \rightarrow \frac{+}{+} \frac{-}{-} \rightarrow (-\infty, 1] \cup [6, +\infty)$
 $x^2 - 10x + 14 \geq 0 \Rightarrow (x-8)(x-2) \geq 0 \rightarrow \frac{+}{+} \frac{-}{-} \rightarrow (-\infty, 2] \cup [8, +\infty)$
 $(I) \cap (II) \Rightarrow D_f = (-\infty, 1] \cup (8, +\infty)$

ب) $y = \frac{\sqrt{x^2 - 7x + 6}}{\sqrt{x^2 - 10x + 14}} \Rightarrow \frac{x^2 - 7x + 6}{x^2 - 10x + 14} \geq 0 \Rightarrow \frac{(x-1)(x-6)}{(x-2)(x-8)} \geq 0$

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

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

ب 9) $\frac{1}{+} \frac{2}{+} \frac{4}{-} \frac{8}{-}$ $D_f = (-\infty, 1] \cup (2, 4] \cup (8, +\infty)$

ب 10) $\frac{1}{+} \frac{2}{+} \frac{4}{-}$ $D_f = (-\infty, 1] \cup (1, \frac{4}{3}) \cup [\frac{3}{2}, +\infty)$