

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

$$B^2 = \{(2,2), (2,3), (3,2), (3,3)\}$$

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

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$$\text{الف) } m^2 = m + 2 \Rightarrow m^2 - m - 2 = 0$$

$$(m+1)(m-2) = 0 \Rightarrow m \begin{cases} -1 \checkmark \\ 2 \times \end{cases} \Rightarrow m = -1$$

بدین دلیل در زوج رتبه (۲، ۱) داریم؛ مقدار m نمی تواند ۲ باشد

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$$\text{ب) } m^2 = m + 2 \Rightarrow m^2 - m - 2 = 0$$

$$(m+1)(m-2) = 0 \Rightarrow m \begin{cases} -1 \times \rightarrow \text{بدلیل } (-1, 3) \\ 2 \times \rightarrow \text{بدلیل } (2, 1) \end{cases}$$

بدین دلیل هیچ مقدار m این مجموعه نیست

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$$a_1 = 1 \Rightarrow 1 - 1 = a + b \Rightarrow a = -b$$

$$a_2 = 2 \Rightarrow 2a + b = 1 \xrightarrow{a = -b} -b = 1 \Rightarrow a = 1, b = -1 \Rightarrow a \times b = 1 \times (-1) = -1$$

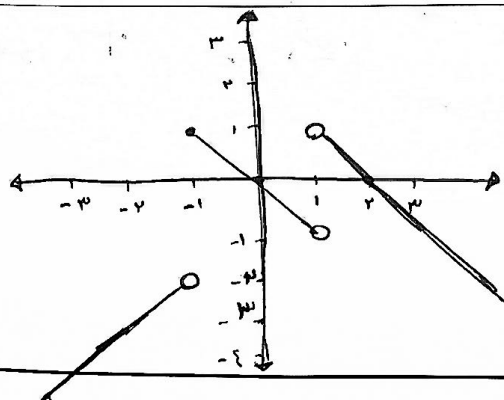
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$$a_1 = K \Rightarrow 2K - 3 = 4 - 3K$$

$$\omega K = 7$$

$$\Rightarrow K = \frac{7}{\omega}$$

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$$D_f: (-\infty, 1) \cup (1, +\infty) \text{ یا } \mathbb{R} - \{1\}$$

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

الف) $2y^3 + x^2 + 1 = 0 \Rightarrow y^3 = \frac{-x^2 - 1}{2}$

$\begin{cases} y_1^3 = \frac{-x^2 - 1}{2} \\ y_2^3 = \frac{-x^2 - 1}{2} \end{cases} \Rightarrow y_1 = y_2 \Rightarrow y_1 = y_2 \quad \checkmark$ تابع هست

ب) $x^2 + 2y^2 - 2x - 12y + 1 = 0$
 $\Rightarrow x^2 - 2x + 1 + 2y^2 - 12y + 4 = 0 \Rightarrow (x-1)^2 + (y-3)^2 = 0 \Rightarrow \begin{cases} x=1 \\ y=3 \end{cases} \Rightarrow (1, 3)$ تابع هست

بدون پاسخ $\rightarrow$ ان

ب) $\frac{x}{y} + \frac{y}{x} + 2\sqrt{\frac{xy}{y^2}} = 4$
 $\Rightarrow \frac{x}{y} + \frac{y}{x} = 2$

$\Rightarrow \frac{x^2 + y^2}{xy} = 2 \Rightarrow x^2 + y^2 - 2xy = 0 \Rightarrow (x-y)^2 = 0$
 $\Rightarrow x=y$ تابع هست

الف) $\frac{x-1}{x-3} \geq 0 \Rightarrow \frac{1}{x-3} \geq 0 \Rightarrow x > 3$
 $\Rightarrow (-\infty, 1] \cup (3, +\infty)$

ب) $\sqrt{y-1} = \sqrt{3} - \sqrt{x}$
 $\sqrt{y-1} \geq 0 \Rightarrow \sqrt{3} \geq \sqrt{x} \Rightarrow 3 \geq x$

الف) $x^2 - 7x + 4 \geq 0$
 $(x-1)(x-4) \geq 0 \Rightarrow x \in (-\infty, 1] \cup [4, +\infty)$
 $x^2 - 10x + 16 \geq 0$
 $(x-2)(x-8) \geq 0 \Rightarrow x \in (-\infty, 2] \cup [8, +\infty)$

ب) $\frac{(x-1)(x-4)}{(x-2)(x-8)} \geq 0 \Rightarrow x \in (-\infty, 1] \cup (2, 4] \cup [8, +\infty)$

الف) $2x^2 - 2x + 3 \geq 0$
 $(x-1)(x-\frac{3}{2}) \geq 0 \Rightarrow x \in (-\infty, 1] \cup [\frac{3}{2}, +\infty)$
 $3x^2 - 7x + 2 \geq 0$
 $(x-1)(x-\frac{2}{3}) \geq 0 \Rightarrow x \in (-\infty, 1] \cup [\frac{2}{3}, +\infty)$