

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

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

$$m^P = m + P \rightarrow m^P - m - P = 0 \rightarrow (m - P)(m + 1) = 0 \quad \begin{matrix} m = P \\ m = -1 \end{matrix}$$

الف $m = -1$

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$$m = P \rightarrow (3, 4)(2, 1)(3, 2)(-2, 2)(3, 4)(2, 4) \quad \times$$

$$m = -1 \rightarrow (3, 1)(2, 1)(-3, -1)(-2, -1)(3, 1)(-1, 4) \quad \checkmark$$

$$m^P = m + P \rightarrow m = P \rightarrow (3, 4)(2, 1)(2, 4)(3, 4)(-2, 2)(-1, 3) \quad \times$$

ب هیچ حقاری برای m امکان پذیر نیست

$$m = -1 \rightarrow (3, 1)(2, 1)(-1, 4)(3, 1)(-2, -1)(-1, 3) \quad \times$$

$$x = 1 \rightarrow x^P - 1 = ax + b \rightarrow 0 = a + b \quad \textcircled{1}$$

$$a \times b = -9$$

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$$x = P \rightarrow 1 = Pa + b \quad \textcircled{2}$$

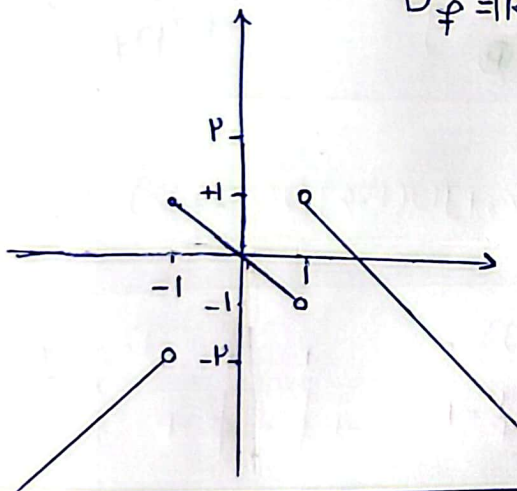
$$\rightarrow a = 1 \rightarrow b = -1$$

$$x = k \rightarrow Px - P = P - Px \rightarrow P|P - P = P - P| \rightarrow \omega|P = P \rightarrow k = \frac{P}{\omega}$$

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$$D_f = \mathbb{R} - \{1\} \quad R_f = (-\infty, 1]$$

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$$x^P y^P + x^P + 1 = 0 \rightarrow Py^P = -x^P - 1 \xrightarrow{x_1 = x_P} Py_1^P = Py_2^P \rightarrow y_1 = y_2 \quad \checkmark \text{ تابع هست}$$

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$$x^P + Py^P - Px - 1Py + 1 = 0 \rightarrow \underbrace{Py^P - 1Py + 9}_{(Py - 3)(Py - 3)} + \underbrace{x^P - Px + 1}_{(x - 1)(x - 1)} = 0 \rightarrow (Py - 3)^P + (x - 1)^P = 0$$

$\downarrow$ $Py \neq 3$

$\downarrow$ $x = 1$
 $y = \frac{3}{P}$

یک نقطه تابع هست $\checkmark$

الف) $x \sin y = y \sin x \rightarrow x=0 \rightarrow 0 \sin y = 0 \cdot y \rightarrow$ ب) $y \sin x = x \sin y \rightarrow y=0 \rightarrow 0 \sin x = 0 \cdot x \rightarrow$
 $\sin 0 = 0$ ج) $x \sin y = y \sin x \rightarrow x=y \rightarrow$

X

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ب) $\sqrt{\frac{x}{y}} + \sqrt{\frac{y}{x}} = 2 \rightarrow$ توجه: x, y فقط می توانند برابر باشند تا بتوان گفت $1+1=2$

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

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ب) $\sqrt{x} + \sqrt{y-1} = \sqrt{3} \rightarrow -\sqrt{x} + \sqrt{3} = \sqrt{y-1} \rightarrow (+\sqrt{3} - \sqrt{x})^2 = y-1 \rightarrow$
 $3+x-2\sqrt{3x}+1=y \rightarrow 3x \geq 0 \rightarrow x \geq 0 \quad D_f = [0, +\infty)$

الف) $x^2 - 7x + 6 \geq 0 \rightarrow (x-6)(x-1) \geq 0 \rightarrow$ ① $\frac{1}{+} \frac{6}{-} \frac{1}{+}$
② $\frac{1}{-} \frac{6}{+} \frac{1}{-}$
① $\cap$ ② $\rightarrow D_f = (-\infty, 1] \cup [6, +\infty)$

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ب) $\frac{(x-6)(x-1)}{(x-1)(x-6)} \geq 0 \rightarrow$ ① $\frac{1}{+} \frac{6}{-} \frac{1}{+} \frac{1}{-}$
② $\frac{1}{-} \frac{6}{+} \frac{1}{-} \frac{1}{+}$
① $\cap$ ② $\rightarrow D_f = (-\infty, 1] \cup [6, +\infty)$

الف) $2x^2 - 5x + 3 \geq 0 \rightarrow x^2 - 5x + 6 \geq 0 \rightarrow (x-3)(x-2) \geq 0$ ① $\frac{1}{+} \frac{3}{-} \frac{2}{+}$
② $\frac{1}{-} \frac{3}{+} \frac{2}{-}$
① $\cap$ ② $\rightarrow (-\infty, 2] \cup [3, +\infty)$

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