

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

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

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

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الف) $m^2 = m + 2 \rightarrow m^2 - m - 2 = 0 \rightarrow m = \begin{cases} -1 \\ 2 \end{cases}$
 تابع نیست $\rightarrow \{(2,4), (2,1)\}$ غیر قابل قبول $\rightarrow -\frac{c}{a} = 2$

ب) $m^2 = m + 2 \rightarrow m = \begin{cases} -1 \\ 2 \end{cases}$
 تابع نیست $\rightarrow \{(-1,4), (-1,3)\}$ $m \in \emptyset$
 $\rightarrow \{(2,4)(2,1)\}$ " "

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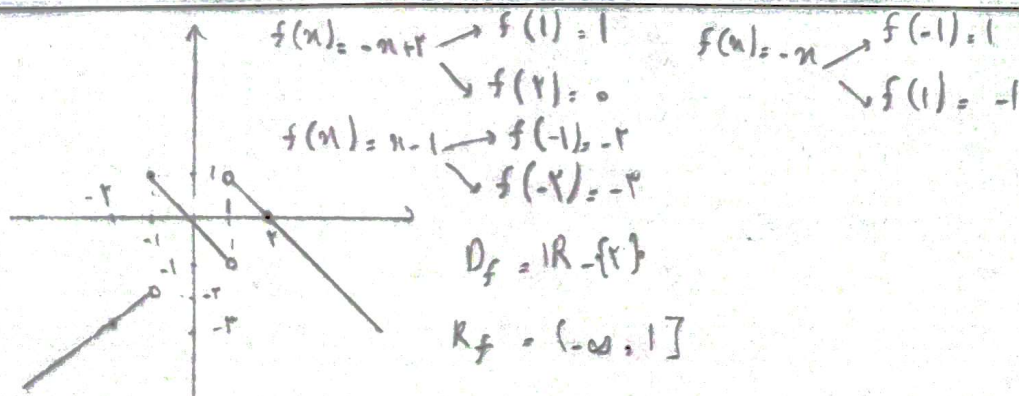
$f(n) = n^2 - 1 \xrightarrow{n=1} f(1) = 1 - 1 = 0 \rightarrow a + b = 0 \rightarrow a = -b$
 $f(n) = an + b \xrightarrow{n=1} f(1) = a + b$

$f(n) = an + b \xrightarrow{n=2} f(2) = 2a + b \rightarrow \begin{cases} 2a + b = 1 \\ -b = 1 \end{cases} \rightarrow \begin{cases} b = -1 \\ a = 1 \end{cases}$
 $f(n) = n^2 \xrightarrow{n=2} f(2) = 1$
 $a \times b = -1 \times 1 = \sqrt{-4}$

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$f(k) = 2k - 3 = f - 3k \rightarrow \Delta k = v \rightarrow k = \frac{v}{\Delta} = \boxed{1, 4}$

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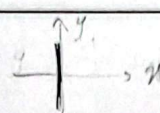


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الف) $\begin{cases} 2y^3 + x^2 + 1 = 0 \\ 2y^3 + x^2 + 1 = 0 \end{cases} \rightarrow 2y^3 = -2y^3 \rightarrow y_1^3 = -y_2^3 \rightarrow \boxed{y_1 = -y_2} \checkmark$ مع ج.ت

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ب) $(x-1)^2 + (y-3)^2 = 0 \rightarrow \begin{cases} x-1=0 \rightarrow x=1 \\ y-3=0 \rightarrow y=3 \end{cases} \checkmark$ مع ج.ت

الف) $x=0 \rightarrow \sin y = y \sin 0$  مع ج.ت

ب) $\frac{x}{y} + \frac{y}{x} + 2\sqrt{\frac{xy}{xy}} = 4 \rightarrow \frac{x+y}{xy} = 2 \rightarrow x^2 + y^2 = 2xy \rightarrow x^2 + y^2 - 2xy = 0$
 $(x-y)^2 = 0 \rightarrow \boxed{x=y}$ مع ج.ت

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

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ب) $\sqrt{x} \rightarrow x \geq 0$ ① $D = ① \cap ② = [0, 3]$
 $\sqrt{y-1} = \sqrt{3} - \sqrt{x} \rightarrow \sqrt{3} - \sqrt{x} \geq 0 \rightarrow \sqrt{x} \leq \sqrt{3} \rightarrow x \leq 3$

الف) $y = \frac{\sqrt{(x-1)(x-4)}}{\sqrt{(x-2)(x-1)}}$ $\frac{1}{x-2} - \frac{1}{x-1} \rightarrow D = (-\infty, 1] \cup (2, +\infty)$ ①
 $\frac{1}{x-1} - \frac{1}{x-4} \rightarrow D = (-\infty, 1] \cup (4, +\infty)$ ②
 $D = ① \cap ② = (-\infty, 1] \cup (2, 4] \cup (4, +\infty)$

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الف) $\frac{c}{a} = \frac{x}{y}$ $\frac{1}{x-1} - \frac{1}{x-4} \rightarrow D = (-\infty, 1] \cup [\frac{4}{3}, +\infty)$ ①
 $\frac{c}{a} = \frac{x}{y}$ $\frac{1}{x-1} - \frac{1}{x-4} \rightarrow D = (-\infty, 1] \cup (4, +\infty)$ ②
 $D = ① \cap ② = (-\infty, 1] \cup [\frac{4}{3}, +\infty)$

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ب) $\frac{1}{x-1} - \frac{1}{x-4} \rightarrow D = (-\infty, 1] \cup (1, \frac{4}{3}) \cup [\frac{4}{3}, +\infty)$