

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

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

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

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الف) $f(x) = \{(x, m^2), (x, 1), (-x, m), (-x, m), (x, m+2), (m, 4)\} \Rightarrow m^2 = m+2 \Rightarrow m^2 - m - 2 = 0$
 $\Rightarrow (m-2)(m+1) = 0 \Rightarrow m=2, m=-1$
 (توجه)

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ب) $g(x) = \{(x, m^2), (x, 1), (m, 4), (x, m+2), (-x, m), (-1, 3)\} \Rightarrow m^2 = m+2 \Rightarrow m^2 - m - 2 = 0$
 $\Rightarrow (m-2)(m+1) = 0 \Rightarrow m=2, m=-1$ (توجه)

$$x=1 \Rightarrow (1)^2 - 1 = a + b \Rightarrow a + b = 0$$

$$x=2 \Rightarrow (2)^2 = 2a + b \Rightarrow 2a + b = 1$$

$$a \times b = -4$$

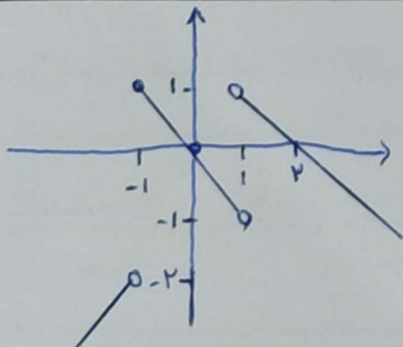
$$\Rightarrow \begin{cases} a+b=0 \\ 2a+b=1 \end{cases} \Rightarrow \begin{cases} -2a-2b=0 \\ 2a+b=1 \end{cases} \Rightarrow -b=1 \Rightarrow b=-1$$

$$a=1$$

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$$x=k \Rightarrow 2k-3 = 5-3k \Rightarrow 5k=8 \Rightarrow k = \frac{8}{5}$$

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

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

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الف) $xy^r = -x^r - 1 \Rightarrow y^r = -\frac{x^r - 1}{r} \Rightarrow (x_1, y_1) \in P \xrightarrow{x_1 = x_r} y_1 = y_r \Rightarrow y_1^r = -\frac{x_1^r - 1}{r}$, $y_r^r = -\frac{x_r^r - 1}{r} \xrightarrow{x_1 = x_r} y_r^r = y_1^r \Rightarrow y_1^r - y_r^r = 0 \Rightarrow (y_1^r + y_r y_1 + y_1^r)(y_1 - y_r) = 0 \Rightarrow y_r = y_1$ تابع مستقيم ب) $x^r - 2x + 1 + (y^r - 1)y + 1 \Rightarrow (x-1)^r + (y-1)^r = 0 \Rightarrow x-1=0 \Rightarrow x=1$ $y-1=0 \Rightarrow y=1 \Rightarrow \left \frac{1}{1} \right \Rightarrow$ تابع مستقيم	6
الف) $x \sin y = y \sin x \xrightarrow{x=180} 180 \sin y = 0 \Rightarrow \sin y = 0 \Rightarrow y = 180, 0$ تابع نیست ب) $\frac{x}{y} + \frac{y}{x} + r \sqrt{\frac{x}{y}} = r \Rightarrow \frac{x}{y} + \frac{y}{x} = r \Rightarrow \frac{x^r + y^r}{x y} = r \Rightarrow x^r + y^r = r x y \Rightarrow x^r - r x y + y^r = 0 \Rightarrow (x-y)^r = 0 \Rightarrow x=y \rightarrow$ تابع مستقيم	7
الف) I) $\frac{x-1}{x-2} \geq 0 \Rightarrow \frac{+}{+} \Rightarrow (-\infty, 1] \cup (2, +\infty)$ II) $\frac{r-x}{x} \geq 0 \Rightarrow \frac{+}{+} \Rightarrow (0, r]$ $\Rightarrow I \cap II \Rightarrow [0, 1]$	8
ب) $\sqrt{y-1} = \sqrt{x} - \sqrt{x} \Rightarrow y-1 = x - 2\sqrt{x} + 1 \Rightarrow \boxed{x \geq 0}$	
الف) I) $x^r - vx + y \geq 0 \Rightarrow (x-y)(x-1) \Rightarrow \frac{+}{+} \Rightarrow (-\infty, 1] \cup [r, +\infty)$ II) $x - 10x + 14 > 0 \Rightarrow (x-1)(x-2) \Rightarrow \frac{+}{+} \Rightarrow (-\infty, 1) \cup (2, +\infty)$ $\Rightarrow I \cap II \Rightarrow (-\infty, 1] \cup (2, +\infty)$	9
ب) $\frac{x^r - vx + y}{x^r - 10x + 14} \geq 0 \Rightarrow \frac{(x-y)(x-1)}{(x-1)(x-2)} \geq 0 \Rightarrow \frac{+}{+} \Rightarrow (-\infty, 1] \cup (2, y) \cup (1, +\infty)$	
الف) I) $2x^r - 5x + 3 \geq 0 \xrightarrow{a+b+c=0} (x-1)(x-\frac{3}{2}) \Rightarrow \frac{+}{+} \Rightarrow (-\infty, 1] \cup [\frac{3}{2}, +\infty)$ II) $2x^r - vx + 4 \geq 0 \xrightarrow{a+b+c=0} (x-1)(x-\frac{4}{r}) \Rightarrow \frac{+}{+} \Rightarrow (-\infty, 1) \cup (\frac{4}{r}, +\infty)$ $\Rightarrow I \cap II \Rightarrow (-\infty, 1] \cup [\frac{3}{2}, +\infty)$	10
ب) $\frac{2x^r - 5x + 3}{2x^r - vx + 4} \geq 0 \xrightarrow{a+b+c=0} \frac{(x-1)(x-\frac{3}{2})}{(x-1)(x-\frac{4}{r})} \geq 0 \Rightarrow \frac{+}{+} \Rightarrow (-\infty, \frac{4}{r}) \cup [\frac{3}{2}, +\infty) - \{1\}$	