

14,5

$$A \times B = \{ (1,2), (2,3), (3,2), (2,4), (3,3), (4,2) \}$$

$$B^T = \{ (2,2), (2,3), (3,2), (4,3) \}$$

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

الف)  $m^2 = m + 2 \rightarrow m^2 - m - 2 = 0 \rightarrow (m-2)(m+1) = 0$   
 $\rightarrow m = 2 \rightarrow \text{غلط}$   
 $\rightarrow m = -1 \rightarrow \text{درست}$

ب)  $m^2 = m + 2 \rightarrow m^2 - m - 2 = 0 \rightarrow (m-2)(m+1) = 0$   
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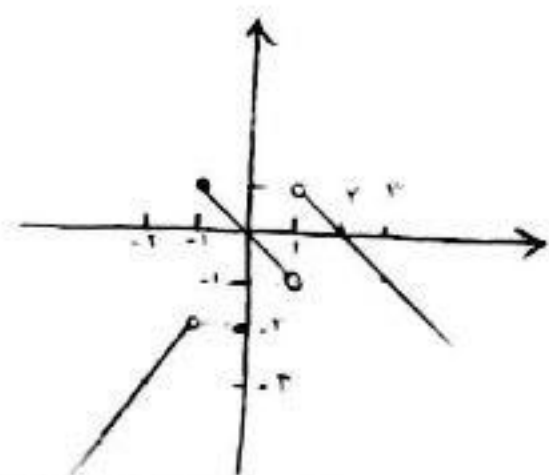
$$f(x) = \begin{cases} x^2 - 1 & x \leq 1 \\ ax + b & 1 \leq x \leq 2 \\ x^2 & x \geq 2 \end{cases}$$

$$\begin{aligned} x=1 &\rightarrow 0 = a + b \rightarrow b = -a \\ x=2 &\rightarrow 1 = 4a + b \rightarrow 1 = 4a - a = 3a \rightarrow a = \frac{1}{3} \\ b &= -a = -\frac{1}{3} \end{aligned}$$

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

$$x=k \rightarrow 2k - 2 = 2 - 3k$$

$$5k = 4 \rightarrow k = \frac{4}{5}$$



$$\begin{aligned} -x + 1 &\rightarrow x = 1 & x = 2 \\ y = 1 & & y = 0 \end{aligned}$$

$$\begin{aligned} -x &\rightarrow x = 1 & x = -1 \\ y = -1 & & y = 1 \end{aligned}$$

$$\begin{aligned} x - 1 &\rightarrow x = -1 & x = 2 \\ y = -2 & & y = -3 \end{aligned}$$

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

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

$$\begin{cases} 2y_1^2 = -x_1^2 - 1 \\ 2y_2^2 = -x_2^2 - 1 \end{cases} \rightarrow y_1^2 = y_2^2 \rightarrow y_1 = y_2$$

$$4y^2 - 12y + 9 + x^2 - 2x + 1 = 0 \rightarrow (2y - 3)^2 + (x - 1)^2 = 0$$

$$x \sin y = y \sin x \rightarrow x = 0 \rightarrow y \in \mathbb{R} \Rightarrow \text{تابع سین}$$

$$0 = y(0) \rightarrow \sin 0 = 0$$

$$x = y \rightarrow \text{تابع است}$$

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الف)  $\begin{cases} \sqrt{\frac{x-1}{x-2}} \rightarrow \frac{1}{+ \quad - \quad +} \Rightarrow D_1 = (-\infty, 1] \cup (2, +\infty) \\ \sqrt{\frac{x-2}{x}} \rightarrow \frac{1}{- \quad + \quad -} \Rightarrow D_2 = (0, 2] \end{cases}$

$D_1 \cap D_2 = (0, 1]$  ✓

ب)  $\sqrt{y-1} = \sqrt{2} - \sqrt{x} \rightarrow \sqrt{y-1} \geq 0 \Rightarrow \sqrt{2} - \sqrt{x} \geq 0 \rightarrow \sqrt{2} \geq \sqrt{x} \Rightarrow x \leq 2$

$D_f = [0, 2]$  ✓

مجموعه مقبول است پس  $x \geq 0$

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الف)  $y = \frac{\sqrt{(x-4)(x-1)}}{\sqrt{(x-2)(x-1)}}$

$\frac{1}{+ \quad - \quad +} \rightarrow D_1 = (-\infty, 1] \cup [4, +\infty)$

$\frac{1}{+ \quad - \quad +} \rightarrow D_2 = (-\infty, 2) \cup (1, +\infty)$

$D_1 \cap D_2 = (-\infty, 1] \cup (1, +\infty) = D_f$

$9x < 1$  (circled)

$1, 5$  (circled)

ب)  $y = \sqrt{\frac{(x-4)(x-1)}{(x-2)(x-1)}}$

$\frac{1 \quad 2 \quad 4 \quad 1}{+ \quad - \quad + \quad - \quad +} \rightarrow D_f = (-\infty, 1] \cup (2, 4] \cup (1, +\infty)$

✓

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الف) عبارت صورت:  $a+b+c \geq 0 \rightarrow 1 \geq \frac{r}{r} \rightarrow \frac{1}{+ \quad - \quad +} \rightarrow D_1 = (-\infty, 1] \cup [\frac{r}{r}, +\infty)$

عبارت مخرج:  $a+b+c \geq 0 \rightarrow 1 \geq \frac{r}{r} \rightarrow \frac{1}{+ \quad - \quad +} \rightarrow D_2 = (-\infty, 1] \cup [\frac{r}{r}, +\infty)$

$D_f = D_1 \cap D_2 = (-\infty, 1] \cup [\frac{r}{r}, +\infty)$

✓

ب) عبارت صورت:  $a+b+c \geq 0 \rightarrow 1 \geq \frac{r}{r}$

عبارت مخرج:  $a+b+c \geq 0 \rightarrow 1 \geq \frac{r}{r}$

$\frac{1 \quad \frac{r}{r} \quad \frac{r}{r}}{+ \quad + \quad - \quad +}$

$\Rightarrow D_f = (-\infty, \frac{r}{r}) \cup [\frac{r}{r}, +\infty) - \{1\}$

✓