

۱۳, ۵

نام و نام خانوادگی: پاسنامه تشریحی تکلیف شماره ۱ کلاس: (مستتر)

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

✓ (۲)

الف) $m^2 = m + 2 \quad m^2 - m - 2 = 0 \quad (m-2)(m+1) \rightarrow m=2$
 $\xrightarrow{m=2} (3, 4), (2, 1), (-3, 2), (-2, 2), (3, 4), (2, 4) \times$
 $\xrightarrow{m=-1} (3, 1), (2, 1), (-3, -1), (-2, -1), (3, 1), (-1, 4) \checkmark$

ب) $m^2 = m + 2 \quad (m-2)(m+1) \xrightarrow{m=2} (3, 4), (2, 1), (2, 4), (3, 4), (-2, 2), (-2, 3) \times$
 $\xrightarrow{m=-1} (3, 1), (2, 1), (1, 4), (3, 1), (-2, -1), (-1, 3) \times$

در هیچ صورت تابع نیست ✓ (۲)

$f(x) = \begin{cases} x^2 - 1 & x \leq 1 \rightarrow x=1 \quad 1^2 - 1 = 0 \quad ax + b \Rightarrow a + b = 0 \quad b = -a \\ ax + b & 1 \leq x \leq 2 \\ x^3 & x \geq 2 \rightarrow x=2 \quad 2^3 = 8 \quad ax + b \Rightarrow 2a + b = 8 \end{cases}$

$\begin{cases} b = -a \\ 2a + b = 8 \end{cases} \rightarrow 2a - a = 8 \quad a = 8 \quad a \times b = 8 \times -8 = -64$
 $b = -8$

✓ (۲)

$f(x) = \begin{cases} 2x - 3 & x \geq k \\ f - 3x & x \leq k \end{cases} \xrightarrow{k=x} 2k - 3 = f - 3k \quad \omega k = 0 \quad \boxed{k = \frac{f}{5}}$

✓ (۲)

$f(x) = \begin{cases} -x + 2 & x > 1 \rightarrow R_f = (-\infty, 1) \\ -x & -1 \leq x < 1 \rightarrow R_f = [-1, 1) \\ x - 1 & x < -1 \rightarrow R_f = (-\infty, -2) \end{cases} \quad R_f = (-\infty, -2) \cup (-1, 1)$

$D_f = R - [1]$

(۱)

الف) $2y_1^3 + x^2 + 1 = 0 \rightarrow 2y_1^3 = -x^2 - 1$ $2y_1^3 = 2y_2^3$ $y_1^3 = y_2^3$ $y_1 = y_2$ (1)

$$x^r_{n+1} + y^r_{n+1} - 1 = 0 \rightarrow (n-1)^r + (n-1)^r = 0$$

$$b) x + 7y - 2x - 11y + 10 = 0 \rightarrow 7y - 11y + (x - 2x + 10) = 0$$

$$\left. \begin{aligned} xy_1^2 - 12y_1 &= -(x^2 - 12x + 10) \\ xy_r^2 - 12y_r &= -(x^2 - 12x + 10) \end{aligned} \right\} \begin{aligned} xy_1^2 - 12y_1 &= xy_r^2 - 12y_r \quad \swarrow (y_1^2 - 12y_1) = \swarrow (y_r^2 - 12y_r) \\ xy_1^2 - 12y_1 &= -(x^2 - 12x + 10) \\ y_1^2 - 12y_1 &= 3(y_1 - y_r) \quad y_1 = 3y_r \quad y_1 \neq y_r \quad - \end{aligned}$$

تابع سین - $\alpha = \pi \rightarrow y = (\pi k, \dots)$ $\alpha \sin y = y \sin \alpha$ (الن)

$$c) \sqrt{\frac{x}{y}} + \sqrt{\frac{y}{x}} = 1$$

$$\sqrt{\frac{x}{y}} = t \rightarrow t + \frac{1}{t} = 2 \quad t^2 - 2t + 1 = 0 \quad (t-1)^2 = 0 \quad t = 1$$

تابع است $x=y$ $\frac{x}{y}=1$ $\sqrt{\frac{x}{y}}=1$

(الف) $y = \sqrt{\frac{x-1}{x-3}} + \sqrt{\frac{3-x}{x}} \rightarrow \begin{cases} \frac{x-1}{x-3} \geq 0 & \frac{1}{x-3} \geq 0 \quad (-\infty, 1] \cup (3, +\infty) \textcircled{1} \\ \frac{3-x}{x} \geq 0 & \frac{0}{x-3} \geq 0 \quad [0, 3] \textcircled{2} \end{cases}$

$$\textcircled{1} \cap \textcircled{2} \rightarrow (0, 1]$$

1) $\sqrt{x} + \sqrt{y-1} = \sqrt{4}$
 $x \geq 0$ $\sqrt{x}$

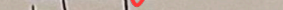
$$\sqrt{x} \leq \sqrt{3} \quad x \leq 3 \rightarrow P_f = [0, 3]$$

$$\left. \begin{aligned} \text{الف) } \sqrt{x^2 - 4} > 0 & \quad (x-2)(x-1) > 0 & \quad \frac{+}{+} \frac{-}{-} \frac{+}{+} \\ \text{ب) } \sqrt{x^2 - 10x + 14} > 0 & \quad (x-7)(x-2) > 0 & \quad \frac{+}{+} \frac{-}{-} \frac{+}{+} \end{aligned} \right\} \cap (-\infty, 1] \cup (1, +\infty)$$

5) $\frac{\sqrt{x^2 - 10x + 14}}{x^2 - 10x + 14} \geq 0$

	1	2	3	4	
+	0	-	+	0	+

$(-\infty, 1] \cup (2, 4] \cup (1, +\infty)$

الب) $\frac{\sqrt{r\alpha^r - \alpha x + r}}{\sqrt{r\alpha^r - v\alpha + r}} > 0 \rightarrow \alpha = 1 \quad \alpha = \frac{c}{a} = \frac{3}{2}$  $\rightarrow (-\infty, 1) \cup (\frac{3}{2}, +\infty)$
 $\sqrt{r\alpha^r - v\alpha + r} > 0 \rightarrow \alpha = 1 \quad \alpha = \frac{c}{a} = \frac{4}{3}$ 

$$\therefore) \frac{\sqrt{rx^2 - 2x + 1}}{rx^2 - vx + r} \geq 0 \rightarrow$$

$$(-\infty, 1) \cup (1, \frac{\kappa}{\mu}) \cup (\frac{\mu}{\gamma}, +\infty)$$