

نام و نام خانوادگی: رزیا همتی پاسخنامه تشریحی تکلیف شماره! کلاس: یازدهم ریاضی دوم دبیرستان

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

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

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

۱

الف) $m^2 = m+2 \rightarrow m^2 - m - 2 = 0$
 $\rightarrow (m-2)(m+1) = 0$ ← $m = 2$ و $m = -1$

$$f(x) = \{(3,1) (2,1) (-3,-1) (-2,-1) (3,1) (-1,4)\}$$

$$\rightarrow f(x) = \{(3,4) (2,1) (-3,2) (-2,2) (3,4) (2,4)\}$$

ب) $m^2 \neq m+2 \rightarrow m^2 - m - 2 = 0$
 $\rightarrow (m-2)(m+1) = 0$ ← $m = 2$ و $m = -1$

هیچ m قبل نیست

$$g(x) = \{(3,1) (2,1) (-1,4) (3,1) (-2,-1) (-1,4)\}$$

$$\rightarrow g(x) = \{(3,4) (2,1) (2,4) (3,4) (-2,2) (-1,4)\}$$

$x=1 \rightarrow x^2 - 1 \rightarrow 1 - 1 = 0$

$x=2 \rightarrow x^3 \rightarrow 2^3 = 8$ $a=8$ $8+b=0 \rightarrow b=-8$

$x=1 \rightarrow ax+b \rightarrow \begin{cases} a+b=0 \\ (a+b)x-1 \end{cases} \rightarrow \begin{cases} -a-b=0 \\ 2a+b=8 \end{cases}$

$x=2 \rightarrow ax+b \rightarrow \begin{cases} 2a+b=8 \\ a=8 \end{cases} \rightarrow b=-8$

$a \times b = 8 \times -8 = -64$

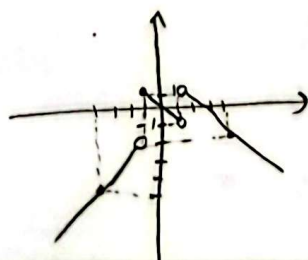
۳

$2k-3 = 6-3k \rightarrow 5k=9 \rightarrow k = \frac{9}{5}$

۴

$f(x) = \begin{cases} -x+2 & x > 1 \\ -x & -1 < x < 1 \\ x-1 & x < -1 \end{cases}$

$x=1 \rightarrow y = -1+2=1$ / $x=2 \rightarrow y = -2+2=0$
 $x=1 \rightarrow y = -1$ / $x=-1 \rightarrow y = 1$
 $x=-1 \rightarrow y = -1-1=-2$ / $x=-2 \rightarrow y = -(-2)-1=1$



$D_{f(x)} = \mathbb{R} - \{1\}$

$R_{f(x)} = (-\infty, 1]$

۵

الف) $2y^3 + x^2 + 1 = 0$ $2y_1^3 + x^2 + 1 = 0 \rightarrow 2y_1^3 = -x^2 - 1 \rightarrow 2y_1^3 = 2y_2^3$ $2y_2^3 + x^2 + 1 = 0 \rightarrow 2y_2^3 = -x^2 - 1$ $y_1 = y_2$ ✓ تابع است	ب) $x^2 + 4y^2 - 2x - 12y + 10 = 0$ $(x^2 - 2x + 1) + (4y^2 - 12y + 9) = 0$ $\rightarrow (x-1)^2 + (2y-3)^2 = 0 \rightarrow x=1$ $2y-3=0 \rightarrow 2y=3 \rightarrow y=\frac{3}{2}$ ✓ تابع است ✓ در نقطه است	6								
الف) $x \sin y = y \sin x$ $x=0 \rightarrow$ برای y بی شمار در هر توان نوشت x تابع نیست	ب) $\sqrt{\frac{x}{y}} + \sqrt{\frac{y}{x}} = 2$ تابع است ✓ در این رابطه باید $x=y$ باشد  $y=x$ تابع است	7								
الف) $y = \sqrt{\frac{x-1}{x-3}} + \sqrt{\frac{x-2}{x}}$ $\frac{x-1}{x-3} \geq 0 \rightarrow \frac{1}{x-3} \geq 0 \rightarrow D_{f(x)} = (-\infty, 1] \cup (3, +\infty)$ $\frac{x-2}{x} \geq 0 \rightarrow \frac{0}{x-2} \geq 0 \rightarrow D_{f(x)} = (0, 2]$ $\text{①} \cap \text{②} = (0, 1]$	ب) $\sqrt{x} + \sqrt{y-1} = \sqrt{3}$ $\sqrt{y-1} = \sqrt{3} - \sqrt{x}$ $y-1 = (\sqrt{3} - \sqrt{x})^2$ $y-1 = 3 - 2\sqrt{3x} + x$ $y = 4 - 2\sqrt{3x} + x$ $\sqrt{3} - \sqrt{x} \geq 0 \rightarrow \sqrt{3} \geq \sqrt{x} \rightarrow 3 \geq x$ $D_{f(x)} = \text{①} \cap \text{②} = [0, 3]$	8								
الف) $y = \frac{\sqrt{x^2 - 7x + 4}}{\sqrt{x^2 - 10x + 4}}$ $x^2 - 7x + 4 \geq 0 \rightarrow (x-1)(x-4) = 0 \rightarrow x=1, x=4$ $\frac{1}{x-4} \geq 0 \rightarrow D_{f(x)} = (-\infty, 1] \cup [4, +\infty)$ $x^2 - 10x + 4 \geq 0 \rightarrow -9x + 4 \geq 0 \rightarrow -9x \geq -4 \rightarrow x \leq \frac{4}{9}$ $\rightarrow -9x + 4 = 0 \rightarrow x = \frac{4}{9}$ $D_{f(x)} = (-\infty, \frac{4}{9}]$ $\text{①} \cap \text{②} = (-\infty, 1] \cup [4, +\infty)$	ب) $y = \frac{\sqrt{x^2 - 7x + 4}}{\sqrt{x^2 - 10x + 4}}$ $x^2 - 10x + 4 \geq 0$ <table border="1" data-bbox="900 1379 1236 1496"><tr><td>1</td><td>2</td><td>4</td><td>8</td></tr><tr><td>+</td><td>-</td><td>+</td><td>-</td></tr></table> $D_{f(x)} = (-\infty, 1] \cup (2, 4] \cup (8, +\infty)$ $x^2 - 10x + 4 = 0 \rightarrow (x-2)(x-8) = 0 \rightarrow x=2, x=8$	1	2	4	8	+	-	+	-	9
1	2	4	8							
+	-	+	-							
الف) $y = \frac{\sqrt{2x^2 - 4x + 3}}{\sqrt{2x^2 - 7x + 6}}$ $2x^2 - 4x + 3 \geq 0 \rightarrow x^2 - 2x + \frac{3}{2} \geq 0$ $\rightarrow (x-1)(x-3) = 0 \rightarrow x = \frac{3}{2} = 1$ $2x^2 - 7x + 6 \geq 0 \rightarrow x^2 - 3.5x + 3 \geq 0$ $\rightarrow (x-2)(x-1.5) = 0 \rightarrow x = \frac{3}{2} = 1.5$ $\text{①} \cap \text{②} = (-\infty, 1] \cup [\frac{3}{2}, +\infty)$	ب) $y = \frac{\sqrt{2x^2 - 4x + 3}}{\sqrt{2x^2 - 7x + 6}}$ $2x^2 - 7x + 6 \geq 0$ <table border="1" data-bbox="952 1794 1264 1910"><tr><td>1</td><td>2</td><td>3</td></tr><tr><td>+</td><td>+</td><td>-</td></tr></table> $D_{f(x)} = (-\infty, 1] \cup (2, \frac{3}{2}) \cup (\frac{3}{2}, +\infty)$	1	2	3	+	+	-	10		
1	2	3								
+	+	-								