۱۴,۲۵

پارمیس عباسیان   یازدهم تجربی   تکلیف [illegible]

۱. $B=\{۲،۳\}$ ، $A=\{۱،۲،۳\}$

$B=\{2,3\}$

$\rightarrow A\times B - B^2 = ?$

$A\times B \rightarrow \{(۱،۲),(۱،۳),(۲،۲),(۲،۳),(۳،۲),(۳،۳)\}$

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

۲

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

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2. مقادیر m را طوری تعریف کنید که مجموعه‌های زیر تابع باشند.

الف) $= f(x) = \{(3,m^2),(2,1),(-3,m),(-2,m),(3,m+2),(m,٤)\}$

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

الف $\rightarrow m^2=m+2 \rightarrow m^2-m-2=0 \rightarrow \dfrac{-b\pm\sqrt{b^2-4ac}}{2a}$

$\nearrow \dfrac{1+\sqrt{1-4(1)(-2)}}{2}=\dfrac{1+\sqrt{9}}{2}=2$

$\searrow \dfrac{1-\sqrt{1-4(1)(-2)}}{2}=\dfrac{1-3}{2}=-1$

۲

البته $\rightarrow ax^2+bx+c=0$ if $a+c=b$ $\nearrow x=-1$ $\searrow x=-\dfrac{c}{a}$

$x=-1$ الف اگر $\rightarrow \{\cancel{(3,1)},(2,1),(-3,1),(-2,1),\cancel{(3,1)},(-1,4)\}$ تابع ✓ پس $\Rightarrow m=-1$

$x=2$ الف اگر $\rightarrow \{\cancel{(3,4)},\boxed{(2,1)},(-3,2),(-2,2),\cancel{(3,4)},\boxed{(2,4)}\}$ تابع ×

ب $\rightarrow \{(3,m^2),(2,1),(m,4),(3,m+2),(-2,m),(-1,3)\}$

ب $\rightarrow m^2=m+2$ $\nearrow m=2$ $\searrow m=-1$ $\rightarrow m^2-m-2=0 \rightarrow a+c=b$ $\nearrow -1$ $\searrow -\dfrac{c}{a}=2$

$m=-1$ ب اگر $\rightarrow \{\cancel{(3,1)},(2,1),\boxed{(-1,4)},\cancel{(3,1)},(-2,-1),\boxed{(-1,3)}\}$ تابع ×

$m=2$ ب اگر $\rightarrow \{\cancel{(3,4)},\boxed{(2,1)},\boxed{(2,4)},\cancel{(3,4)},(-2,2),(-1,3)\}$ تابع ×

به ازای هیچ مقداری $\rightarrow g(x)$ تابع نیست

.3

$a\times b$

$$f(x)=\begin{cases}x^2-1 & ; x\leqslant 1\\ ax+b & ; 1\leqslant x\leqslant 2\\ x^3 & ; x\geqslant 2\end{cases}$$

$x^2-1 \xrightarrow{(1)} 0$ $\rightarrow \boxed{a+b=0} \rightarrow a=-b$

$ax+b \xrightarrow{(1)} a+b$

$ax+b \xrightarrow{(2)} 2a+b \rightarrow \boxed{2a+b=8}$

$x^3 \xrightarrow{(2)} 8$

۲

$-\begin{cases}a+\cancel{b}=0\\ 2a+\cancel{b}=8\end{cases} \Rightarrow \begin{matrix}a=8\\ b=-8\end{matrix}$

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

ب) $\sqrt{\dfrac{x^2-7x+6}{x^2-10x+16}}$ $\dfrac{(x-1)(x-6)}{(x-2)(x-8)}$ ① ⑥ ② ⑧

	1		2		6		8	
+	●	−	○	+	●	−	○	+

$D_f = (-\infty, 1] \cup (2, 6] \cup (8, +\infty)$

.10

$\text{if } ax^2+bx+c=0 \quad a+b+c=0 \begin{cases} x=1 \\ x=\dfrac{c}{a} \end{cases}$

الف) $= \dfrac{\sqrt{2x^2-5x+3}}{\sqrt{3x^2-7x+4}}$ $\rightarrow 1, \dfrac{3}{2}$; $\hookrightarrow 1, \dfrac{4}{3}$

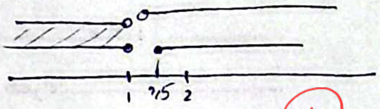
	1		$\frac{3}{2}$	
+	●	−	●	+

$(-\infty, 1] \cup [\tfrac{3}{2}, +\infty)$ I

	1		$4/3$	
+	○	−	○	+

$(-\infty, 1) \cup (\tfrac{4}{3}, +\infty)$ II

$\text{I} \cap \text{II} \longrightarrow$



$(-\infty, 1) \cup [\tfrac{3}{2}, +\infty)$

۴

$\text{if } ax^2+bx+c=0 \quad a+b+c=0 \begin{cases} x=1 \\ x=\dfrac{c}{a} \end{cases}$

ب) $y = \sqrt{\dfrac{2x^2-5x+3}{3x^2-7x+4}}$ $\begin{matrix} \nearrow 1 \\ \searrow 3/2 \end{matrix}$ $\begin{matrix} \nearrow 1 \\ \searrow 4/3 \end{matrix}$

	1^{*}		$4/3$		$3/2$	
−	○	+	○	−	●	+

$D_f: (1, 4/3) \cup [3/2, +\infty)$

$f(x)=\begin{cases}2x-3 & ; x\geqslant k\\ 4-3x & ; x<k\end{cases}$

$2x-3 \xrightarrow{k} 2k-3$

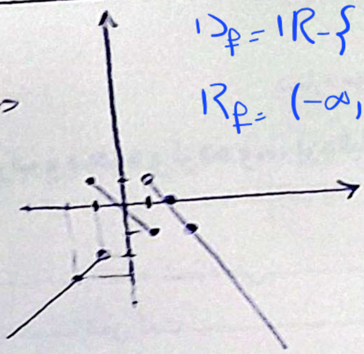
$4-3x \xrightarrow{k} 4-3k$

$2k-3=4-3k$

✓ $5k=7 \to k=\frac{7}{5}$

.5

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



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

$R_f=(-\infty,1]$

①

.6

(الف $2y^3+x^2+1=0$ 　　مثال نقض if $x=1$ 　　$2y^3+1+1=0$ 　　$2y^3=-2$ ✓ 　　$y=-1$ ✓

①

(ب $x^2+4y^2-2x-12y+10=0$

$(x-1)^2+(y-6)^2-17=0$

$(x-1)^2+(y-6)^2=17$

if $x=2 \to (2-1)^2=1$

$(y-6)^2=16 \to y=10$, $y=2$

$(x-1)^۲+(۲y-۳)^۲=۰$ 　۱-

فقط شامل $(1,\frac{۳}{۲})$ است پس تابع است ×

.7

(الف $x\sin y = y\sin x$

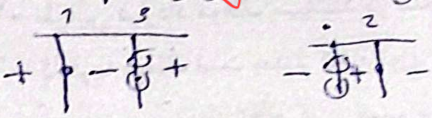
$x=\frac{\pi}{2}$ 　$y=1$ 　$\cancel{\sin\frac{\pi}{2}}\,y=\frac{\pi}{2}\sin y$ ✓ $= y=\frac{\pi}{2}\sin y$ 　Idk .. تابع نیست

②

(ب $\sqrt{\frac{x}{y}}+\sqrt{\frac{y}{x}}=2$ 　　$x=1$ ✓ 　　$\sqrt{\frac{1}{y}}+\sqrt{y}=2 \to y=1$ 　تابع

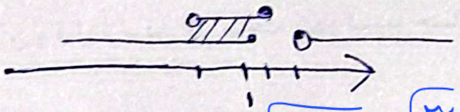
.8

الف = $y=\sqrt{\frac{x-1 \; ①}{x-3 \; ③}}$ ✓ $+\sqrt{\frac{2-x \; ②}{x \; ⓪}}$



$(-\infty,1]\cup(۳,+\infty)\cap(۰,۲]=(۰,1]$

۰,۷۵



$\sqrt{x}\geqslant۰, -\sqrt{x}\leqslant۰$

(ب $\sqrt{x}+\sqrt{y-1}=\sqrt{۳}$

$x\geqslant۰$

$y-1\geqslant۰ \to y\geqslant1$

$\sqrt{y-1}=\sqrt{۳}-\sqrt{x}$

$\sqrt{۳}-\sqrt{x}\geqslant۰ \to x\leqslant۳$

$\boxed{۰\leqslant x\leqslant۳}$

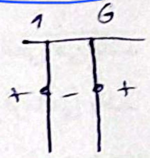
.9

۱,۰

(الف $\dfrac{\sqrt{x^۲-۷x+6}}{\sqrt{x^2-10x+16}}$

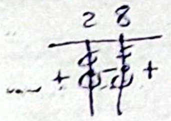
$\overset{①}{}\;\overset{⑥}{}$ $(x-1)(x-6)$

$\overset{②}{}\;\overset{⑧}{}$ $(x-2)(x-8)$



$(-\infty,1]\cup[6,+\infty)$ I

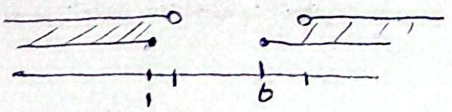
۱ ع.ت



$(-\infty,۲)\cup(8,+\infty)$ II

$\boxed{x\leqslant1}$

$\text{I}\cap\text{II} \to$



$(-\infty,1]\cup[8,+\infty)$