حل امتحان   پایه یازدهم

۱۸,۷۵

۱) $A \times B = \{(1,2)(1,3)(2,2)(2,3)(3,2)(3,3)\} = 2 \times 3 = 6$

$\} \; 6-4=2]$

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

۱,۵

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

۲) الف) $f(x) = \{(3,m^2),(2,1),(-3,m),(-2,m),(3,m+2),(m,4)\}$ غ ق ق

$m^2 = m+2 \rightarrow m^2 - m - 2 = 0 \rightarrow (x-2)(x+1)=0 \rightarrow m=2 \rightarrow (2,1)(2,4)$

$\hookrightarrow m=-1 \rightarrow m=-1]$

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

۲

$m^2 = m+2 \rightarrow m=2 \rightarrow (2,4),(2,1)$ غ ق ق   } جواب ندارد

$\hookrightarrow m=-1 \rightarrow (-1,4),(-1,3)$ غ ق ق

۳-

$$f(x) = \begin{cases} x^2-1 & x \le 1 \quad ① \\ ax+b & 1 \le x \le 2 \quad ② \\ x^3 & x \ge 2 \quad ③ \end{cases}$$

$x=1 \quad ①② \rightarrow a+b=0$

$x=2 \quad ②③ \rightarrow 2a+b=8$

$2a+b-(a+b)=8$

$a=8 \,,\, b=-8$

۱,۷۵

$a \times b = -64$

۴-

$3k-3 = 4-2k \rightarrow 5k=7 \rightarrow k=\frac{7}{5}$

۲

۵-

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

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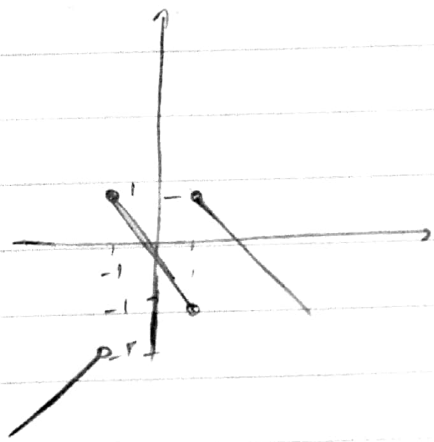
$D_{h(x)} = \mathbb{R} - \{1\}$

$R_y = (-\infty, 1]$



۶- الف) $2y^3 + x^2 + 1 = 0$ تعریف یک به یک

$x_1 = x_2 \quad 2y_1^3 + 1 = x_1^2$

$2y_2^3 + 1 = x_2^2 \quad \} \quad 2y_1^3 + 1 = 2y_2^3 + 1$

$2y_1^3 = 2y_2^3 \rightarrow y_1 = y_2$

حل تمرین — نیمسال دوم

۶- ب) $x^2+4y^2-2x-12y+10=0 \rightarrow x^2-2x+1+4y^2-12y+9=0$

$(x-1)^2+(2y-3)^2=0$

$x-1=0 \quad x=1 \qquad 2y-3=0 \quad y=\frac{3}{2}$

$\left(1,\frac{3}{2}\right)$

۲

۷- الف) $x\sin y = y\sin x$ — مثال نقض: $x=0$

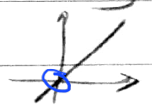
$x=0 \Rightarrow y$ هر عددی می‌تواند باشد

۲

ب) $\sqrt{\frac{x}{y}}+\sqrt{\frac{y}{x}}=2 \xrightarrow{\text{به توان ۲}} \left(\sqrt{\frac{x}{y}}+\sqrt{\frac{y}{x}}\right)^2=4$

$\frac{x}{y}+\frac{y}{x}+2=4 \rightarrow \frac{x^2+y^2}{xy}=2 \rightarrow x^2-2xy+y^2=0$

$(x-y)^2=0 \rightarrow x=y$



۸- الف) $y=\sqrt{\frac{x-1}{x-3}}+\sqrt{\frac{2-x}{x}}$

$y_1=\sqrt{\frac{x-1}{x-3}} \Rightarrow$ (جدول علامت: 1, 3: $+\;0\;-\;$تن$\;+$) $\quad D_{y_1}=(-\infty,1]\cup(3,+\infty)$

$y_2=\sqrt{\frac{2-x}{x}} \Rightarrow$ (جدول علامت: 0, 2: $-\;$تن$\;+\;0\;-$) $\quad D_{y_2}=(0,2]$

$x=(0,1]$

۲

ب) $\sqrt{x}+\sqrt{y-1}=\sqrt{3} \qquad \sqrt{x}\geq 0$

$\sqrt{y-1}=\sqrt{3}-\sqrt{x}$

$\sqrt{3}-\sqrt{x}\geq 0 \rightarrow x\leq 3$

$0\leq x\leq 3 \rightarrow D_y=[0,3]$

بژمان ترکی حلِ تمرینات

9- الف) $y = \dfrac{\sqrt{x^2-7x+6}}{\sqrt{x^2-10x+16}} = \dfrac{\sqrt{(x-6)(x-1)}}{\sqrt{(x-2)(x-8)}}$ $\quad D_y = (-\infty, 1] \cup (8, +\infty)$

$x \leq 1$

$\sqrt{(x-6)(x-1)} \Rightarrow$ (1: + | − | + :6) $\rightarrow D_{y_1} = (-\infty, 1] \cup [6, +\infty)$

$\sqrt{(x-2)(x-8)} \Rightarrow$ (2: + | − | + :8) $\rightarrow D_{y_2} = (-\infty, 2) \cup (8, +\infty)$

$\cap$

1,5

ب) $y = \sqrt{\dfrac{(x-6)(x-1)}{(x-2)(x-8)}}$

x		1		2		6		8	
x^2-7x+6	+	0	−		−	0	+		+
$x^2-10x+16$	+		+	0	−		−	0	+
	+	0	−	ت.ن	+	0	−	ت.ن	+

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

الف) $y = \dfrac{\sqrt{2x^2-5x+3}}{\sqrt{3x^2-7x+4}} = \dfrac{\sqrt{(x-1)(x-\frac{3}{2})}}{\sqrt{(x-1)(x-\frac{4}{3})}}$

(1, $\frac{3}{2}$: + | − | +) $\quad$ (1, $\frac{4}{3}$: + ت.ن | − | ت.ن +)

$x'^2-5x'+6 = 0 \longrightarrow (x'-2)(x'-3) \longrightarrow x' = 2 \;\;\rightarrow x = \frac{2}{2} = 1$

$\quad\quad x' = 3 \;\;\rightarrow x = \frac{3}{2}$

$3x^2-7x+4 = 0 \longrightarrow$ مجموع ضرائب $0 \longrightarrow x = 1$

$x = \frac{c}{a} = \frac{4}{3}$

2

$D_1 = (-\infty, 1] \cup [\frac{3}{2}, +\infty)$

$D_2 = (-\infty, 1) \cup (\frac{4}{3}, +\infty)$ $\quad \cap \quad$ $D_f = (-\infty, 1) \cup [\frac{3}{2}, +\infty)$

ب) $\sqrt{\dfrac{(x-1)(x-\frac{3}{2})}{(x-1)(x-\frac{4}{3})}}$ $\quad$ (1, $\frac{4}{3}$, $\frac{3}{2}$: + | + ت.ن | − | +)

$D = (-\infty, \frac{4}{3}) \cup [\frac{3}{2}, +\infty) - \{1\}$

REEF GROUP