سانیا هادیان   تکلیف شماره ۲

۱- الف)
$$\frac{x-1}{x}-\frac{x}{x-1}\geq 0 \rightarrow \frac{-2x+1}{x(x-1)}\geq 0$$

	0		$\frac{1}{2}$		1	
$+$		$-$		$+$		$-$

$R=(-\infty,0)\cup[\frac{1}{2},1)$

ب)
$$\frac{\frac{1}{x+1}-\frac{2}{x}}{\frac{3}{x-1}+\frac{4}{x+2}}$$

$$\frac{3(x+2)+4(x-1)}{(x-1)(x+2)}=\frac{4x+5}{(x-1)(x+2)} \quad -\frac{5}{4}$$

$$\frac{x-2x-2}{x(x+1)} \quad -1, 0$$

$R-\{-2,-\frac{5}{4},-1,0,1\}$

۲- الف)
$$(\frac{1}{2})^x-9\times(32\cdot 2^x)\geq 0 \Rightarrow$$
$x=-2 \quad -2/5$

	$-2/5$		-2	
$-$		$+$		$-$

$[-2/5,-2]$

ب)
$x-1\geq 0 \Rightarrow x\geq 1$
$2y+1\geq 0 \Rightarrow y\geq -1$
$x=[1,+\infty)$

۳-
$$x^2-x-2>0 \rightarrow (x+1)(x-2)>0 \quad -1,\ 2$$

	-1		2	
$+$		$-$		$+$

$I=(-\infty,-1)\cup(2,+\infty)$

$$\sqrt{x^2-1}\geq 0 \rightarrow (x-1)(x+1)\geq 0$$

	-1		1	
$+$		$-$		$+$

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

شرط ترتیب اشتراک شود

$II\cap I=(-\infty,-1)\cup(2,+\infty)$

۴-
$$\sqrt{3+2ax-x^2} \rightarrow 3-2a=4=0 \rightarrow a=-\frac{1}{2}$$

$$\Delta=\frac{1}{4}+12 \rightarrow \frac{49}{4}$$

$$\frac{-b\pm\sqrt{\Delta}}{2a}=\frac{\frac{1}{2}-\frac{7}{2}}{-1}=\frac{6}{4}$$

$$a+b=-\frac{1}{2}+\frac{6}{4}=-\frac{2}{4}+\frac{6}{4}=\frac{4}{4}=1$$

۵-
$2x+3=x$
$x=-3$

$3x-2=x$
$2x=2$

	-3		2	
$-$		$+$		$+$

$D=(-3,+\infty)$

$2(7a+7)=3a-4a \Rightarrow 14a+14=4a-4 \Rightarrow 10a=-18 \Rightarrow a=\frac{-18}{10}=-\frac{9}{5}$ -۶

$\sqrt{2+\sqrt{3}}+\frac{1}{\sqrt{2+\sqrt{3}}}+2+\sqrt{2-\sqrt{3}}+\frac{1}{\sqrt{2-\sqrt{3}}}+2=2\sqrt{6}+4$ -۷

$A^2=(\sqrt{2+\sqrt{3}}+\sqrt{2-\sqrt{3}})^2=\sqrt{6}$

$A^2=2+\sqrt{3}+2-\sqrt{3}+2$

$A^2=6$

$A=\sqrt{6}$

$\frac{\sqrt{2-\sqrt{3}}+\sqrt{2+\sqrt{3}}}{(2+\sqrt{3})(2-\sqrt{3})}=\sqrt{2-\sqrt{3}}+\sqrt{2+\sqrt{3}}$

$\sqrt{6}$

$2F(x)-3F(-x)=4x^2-x$ -۸

$2F(-x)-3F(x)=4x^2+x$

$4F(x)-6F(-x)=8x^2-2x$

$+\ 6F(-x)-9F(x)=12x^2+3x$

$-5F(x)=20x^2+x$

$F(x)=-4x^2-\frac{x}{5}$

$x+6F(0)=16+2m+3n-1 = 6F(0)=15+5m \Rightarrow F(0)=\frac{15+5m}{6} \Rightarrow n=-2$ -۹

$2F(0)=3m-1 \Rightarrow F(0)=\frac{3m-1}{2} \Rightarrow m=0$

$\Rightarrow \frac{3m-1}{2}=\frac{15+5m}{6} \Rightarrow 18m-6=30+10m$

$8m=36$

$m=\frac{36}{8}=\frac{9}{2}$

$\Rightarrow 2F(0)=3(\frac{9}{2})-1=\frac{27}{2}-\frac{2}{2}=\frac{25}{2}=2F(0) \Rightarrow \boxed{\frac{25}{4}=F(0)}$

$F(x)=ax+b$ -۱۰

$F(\frac{1}{x})=\frac{a}{x}+b$

$+ = \frac{ax^2+a+2bx}{x}=\frac{3x^2-12x+3}{x}$

$\Rightarrow a=3,\ b=-6 \Rightarrow$

$(-1)\times 3-6=\boxed{-9}$