نیمسال اول

۱)

$D_{f(x)} = [-4, 2]$ $\quad D_{f(3x-2)} \xrightarrow{+2} [-4, 2]$ $\quad +2 \quad +2$

نیمسال دوم

۱) الف)

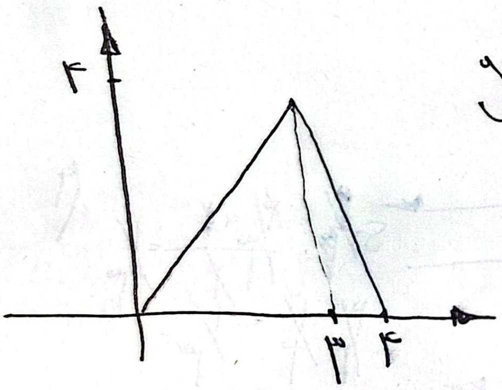
$D_{f(x)} = [-4, 2]$ $\quad D_{f(3x-2)} \xrightarrow{+2} [-2, 4] \xrightarrow{\times \frac{1}{3}} [-\frac{2}{3}, \frac{4}{3}]$

$D_{f(3x-2)} = [-4, -2]$ $\quad D_{f(x)} \xrightarrow{\times 3} [-12, -6] \xrightarrow{-2} [-14, -8]$

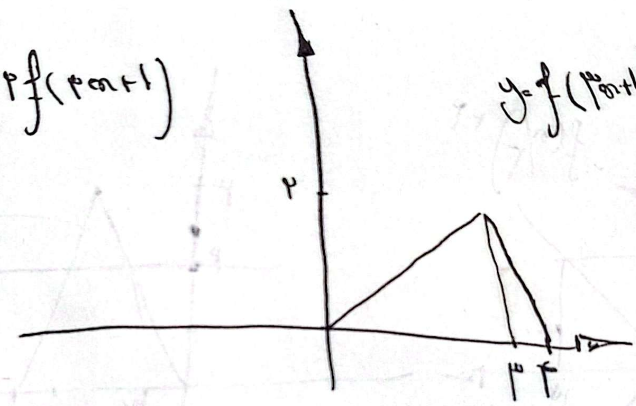
۲)

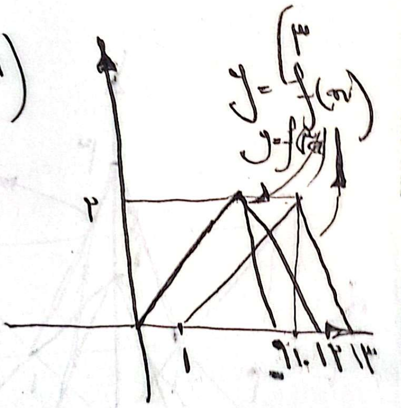
$f(x) = x + \sqrt{x-2} \xrightarrow[\text{به راست}]{\text{انتقال دو واحد}} f(x) = x - 2 + \sqrt{x-4} \longrightarrow y - 2 + \sqrt{y-4} = x$

$y = y - 2 + \sqrt{y-4}$ $\quad \sqrt{y-4} - 2 = 0$ $\quad \sqrt{y-4} = +2 \Rightarrow y = 8$



$y = ۲f(۲x+۱)$





۱۳−۱ = ۱۲ ، $\frac{۱۲۹۲}{۲}$ = ۱۲

-۴

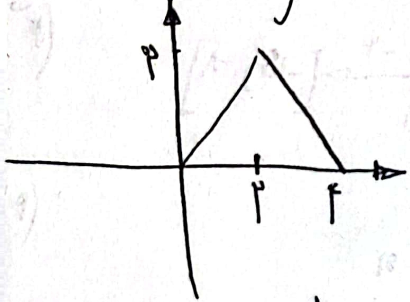
$y = f(x) \longrightarrow$ ~~...~~ $-۶+a/۲$; $-۳a^{۲} = -۶$

$y = a + ۲f(x - \frac{a}{۲}) = ۲\left(\frac{a}{۲} + f(x - \frac{a}{۲})\right) = ۲\left(\frac{a}{۲} + f(\frac{۱}{۲}x - \frac{a}{۲})\right)$ $\quad ۲\left(۳ + \frac{a}{۲}\right) = ۴ + a$

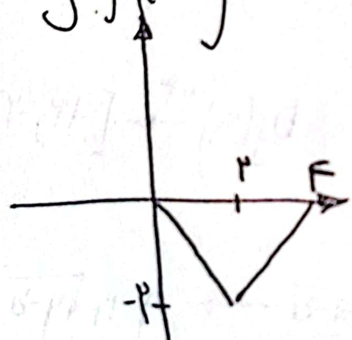
$۲(۴+a) - ۸ = ۸ + ۲a = ۴ + a \Rightarrow a = -۴$

-۵

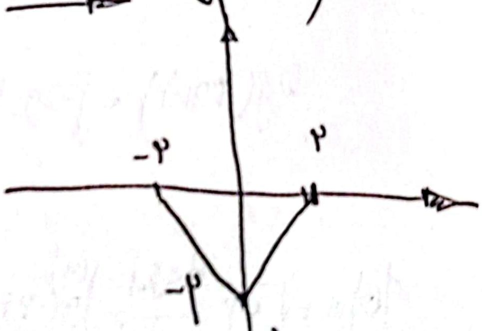
$y = -f(x-۲)$



$y = f(x-۲)$

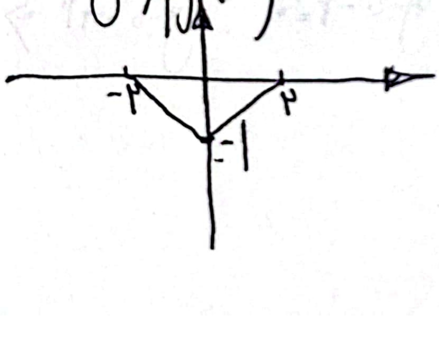


$\longrightarrow$ $y = f(x)$

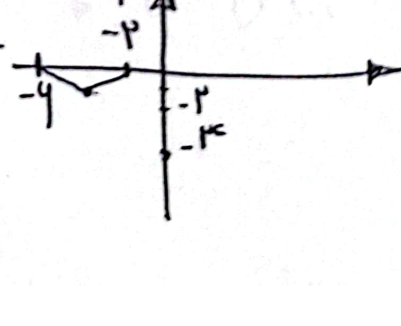


$y = \frac{۱}{۲}f(۴-x)$

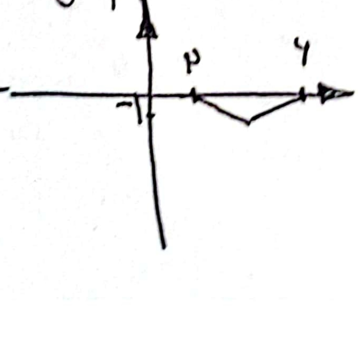
$y = \frac{۱}{۲}f(x)$

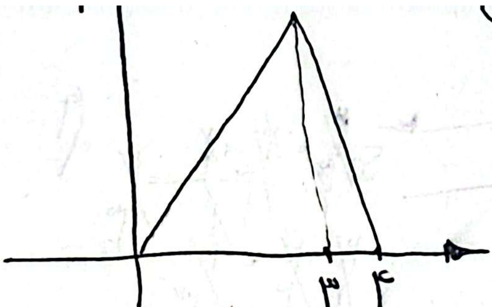


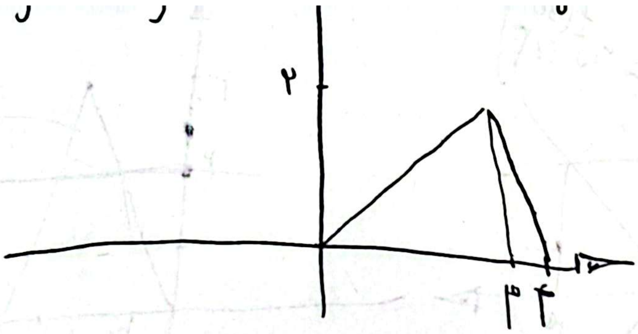
$\longrightarrow y = \frac{۱}{۲}f(x+۴)$

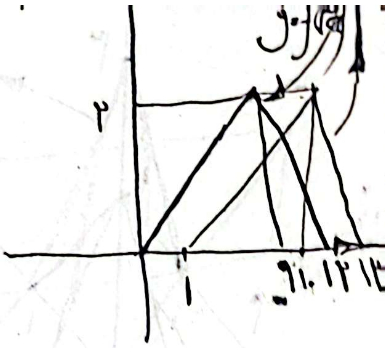


$y = \frac{۱}{۲}f(۴-x)$





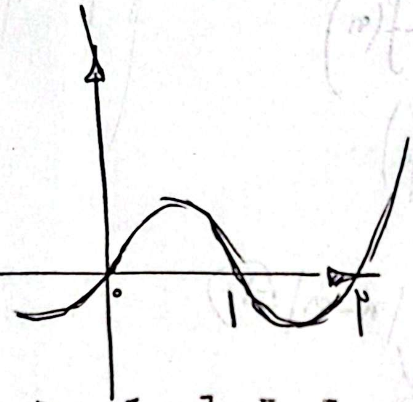




$13-1=12 \quad \frac{12\times 2}{2}=12$

$x+2=0$
$x=-2$

$f(2x-1)$



$D_y=[-2,0]\cup[1,2]$

(۶

	-2	0	1	2	
$(x+2)$	$-$	$+$	$+$	$+$	$+$
$f(2x-1)$	$-$	$-$	$+$	$-$	$+$
$\Rightarrow -(x+2)\,f(2x-1)$	$-$	$+$	$-$	$+$	$-$

$f(x)=|2x-3|+1 \longrightarrow f(x)=|2x-3+k|-2$

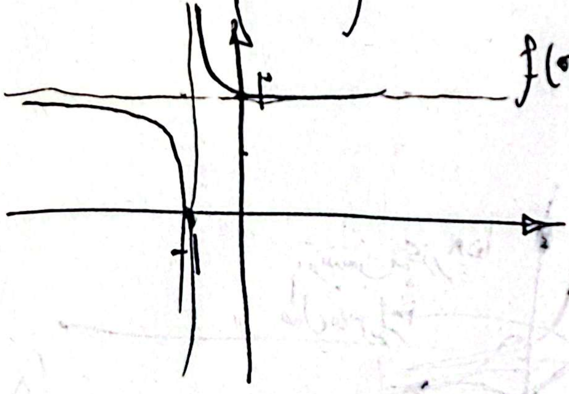
(۷

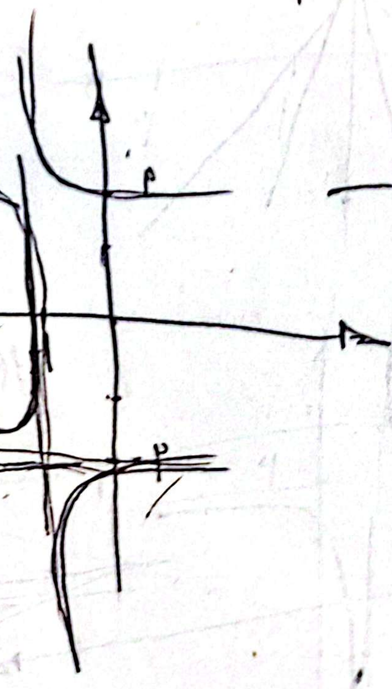
$|2x-3|+1=|2x-3+k|-2$
$x=0$
$4=|-3+k|-2 \Rightarrow 6=|-3+k|$
$\Rightarrow k=9,\ k=-3 \quad k>0 \Rightarrow k=9$

(۸

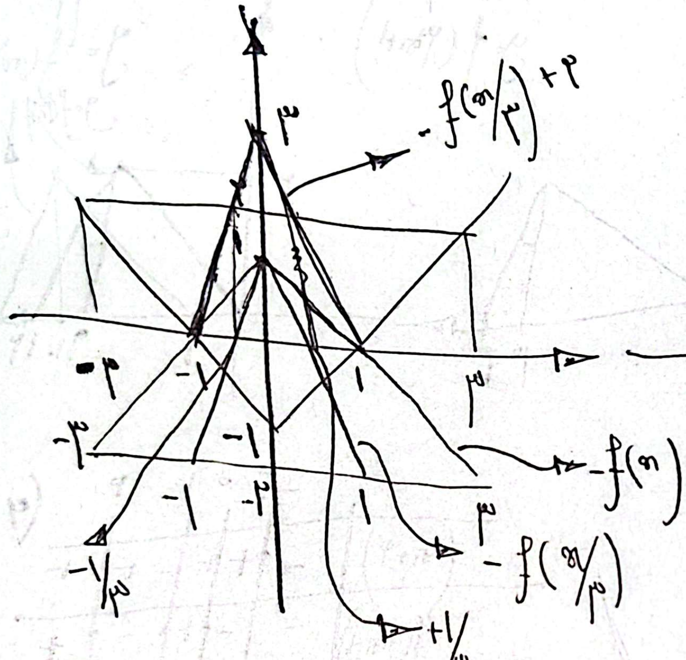
$f(x)=-\left(\frac{2x-1}{x+1}\right) \longrightarrow f(x)=\frac{-2/3\,x+1}{+1/3\,x+1}$

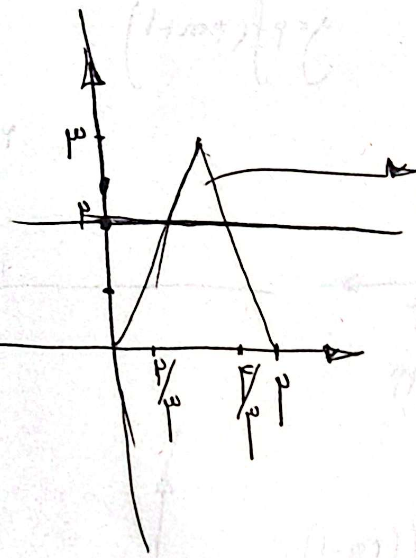
$f(x)=\frac{2x-1}{x+1}$





→ ۴ واحد





$-۱/۳$

۹)

۱۰)

$$\frac{(a-۲)(a-۲)}{۲} + \frac{۴\cancel{۲}}{\cancel{۲}} = \frac{۹}{۲} \qquad |x-a|-۲$$

$$\frac{(a-۲)^۲}{\cancel{۲}} = \frac{۱}{\cancel{۲}} \Rightarrow a=۳ \Rightarrow f(۱/۳) = |۱/۳ - ۳| - ۲ = |۱ - ۹/۳| - ۲ = ۸/۳ - ۶/۳ = ۲/۳$$