

$$Df(x) = [-1, 1] \rightarrow Df(x-1) = ?$$

(أ)

$$-1 \leq x \leq 1$$

$$\rightarrow -1 \leq x-1 \leq 1$$

$$-1 \leq x-1 \leq 1 \rightarrow -1 \leq x \leq 2$$

$$\rightarrow D_{f(x-1)} = [-1, 2]$$

$$Df(x-1) = [-1, 2] \rightarrow -1 \leq x \leq 2$$

$$-1 \leq x-1 \leq 1$$

$$-1 \leq x-1 \leq 1 \rightarrow -1 \leq x \leq 2$$

$$\rightarrow Df(x) = ? \rightarrow Df(x) = [-1, 1]$$

$$-1 \leq x \leq 1$$

$$y = f(x) = x + \sqrt{x-1}$$

$$\xrightarrow{\text{نقل الحد}} f(x-1) = x-1 + \sqrt{x-1-1}$$

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

$$\xrightarrow{y=x-1} y = x-1$$

$$\text{وذلك}$$

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

$$\xrightarrow{\text{نقل الحد}} y = x-1$$

$$+ f(x-1) = x$$

$$x-1 + \sqrt{x-1} = x$$

$$+ \sqrt{x-1} = 1 \rightarrow x=1$$

$$\rightarrow x = y + 1 + \sqrt{y-1}$$

$$x = y$$

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

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

$$\rightarrow x=1$$

$$g(x) = 2f(x+1)$$

$$\rightarrow R = [0, 4]$$

$$\rightarrow R = [0, 2]$$

$$\frac{1}{2} g(x)$$

$$D(g(x)) \rightarrow \begin{matrix} 0 \leq x \leq 2 \\ 0 \leq x+1 \leq 3 \\ 1 \leq x+1 \leq 3 \end{matrix}$$

$$\rightarrow \text{المجال} = \frac{(2) \times (12)}{2} = 12$$

$$A(2, -1)$$

$$\rightarrow \frac{a-a}{2} = 2 \rightarrow x-a=2$$

$$x=a+2$$

$$a + 2f\left(\frac{x-a}{2}\right)$$

$$+ f(-1)$$

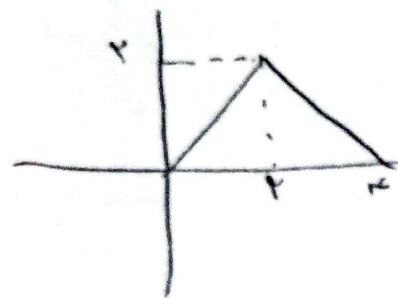
$$A'(a+2, a-1)$$

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

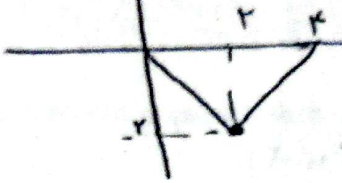
$$\text{أو } A'$$

$$a-1 = 2a$$

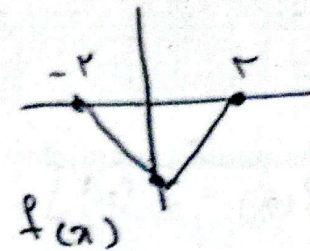
$$-1 = a$$



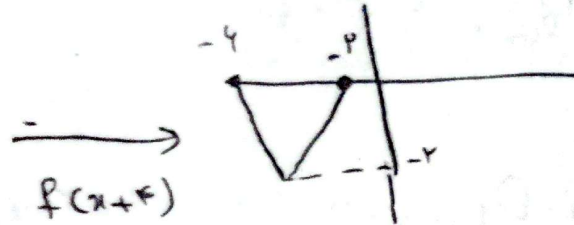
$$-f(x-2)$$



$$f(x-2)$$

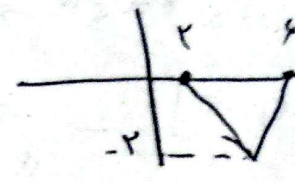


$$f(x)$$

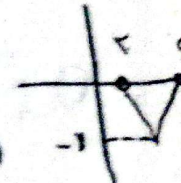


$$f(x+2)$$

$$f(-x+2)$$



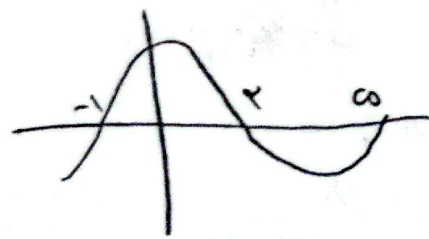
$$\frac{1}{2}f(-x+2)$$



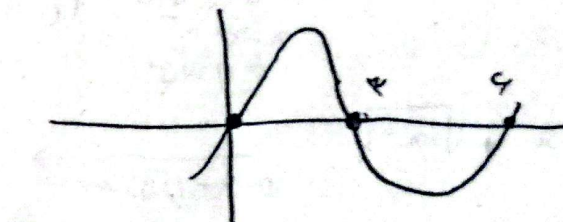
$$y = \sqrt{(x+2) f(2x-1)}$$

$$-(x+2) f(2x-1) \geq 0$$

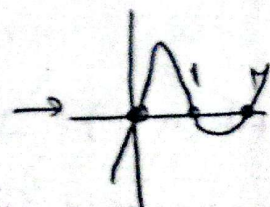
نشان دهیم
که این عبارت
مثبت است



$$f(x)$$

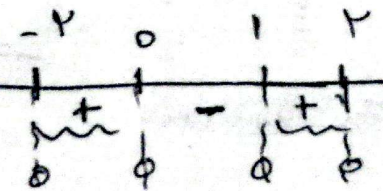


$$f(x-1)$$



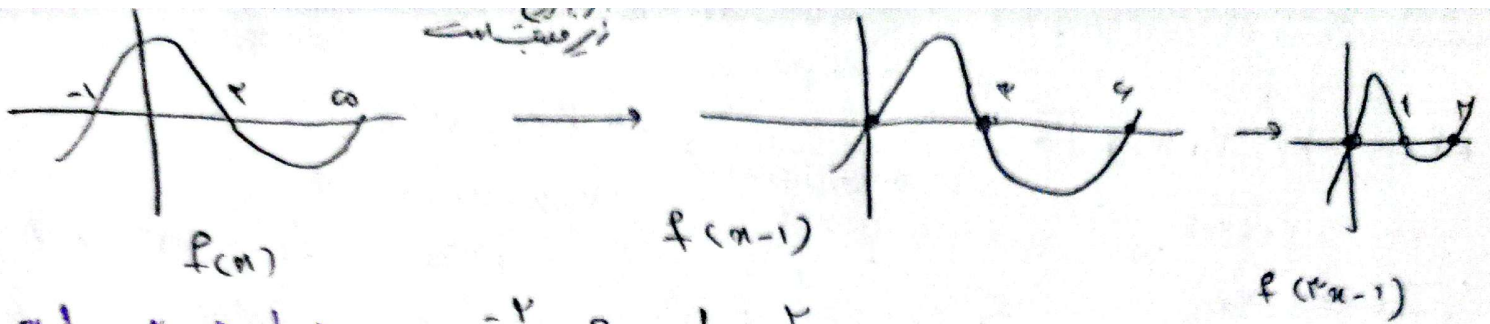
$$f(2x-1)$$

x	-2	0	1	2
x+2	-	+	+	+
f(2x-1)	-	-	+	-
نتیجه	-	+	-	-



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

نشان دهیم که این عبارت مثبت است



x	-2	0	1	2
$x+2$	-	+	+	+
$f(x-1)$	-	-	+	-
$f(2x-1)$	-	+	-	+

$-2 \quad 0 \quad 1 \quad 2$
 $\phi \quad \phi \quad \phi \quad \phi$

$\rightarrow D_g = [-2, 0] \cup [6, 2]$

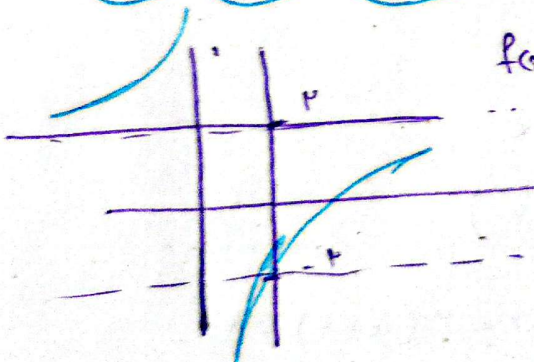
$$f(x) = |2(x+k) - 2| - 2$$

k واحد به چپ $\leftarrow$ به راست $x+k$
 3 واحد به راست $\leftarrow$ از عرض 3 واحد $(1-3)$

$$|2x + 2k - 2| - 2 = |2x - 2| + 1$$

عمل به صورت $\frac{1}{2}$ $\rightarrow |2k - 2| - 2 = 1$
 معبر است $|2k - 2| = 3$
 نه $x=0$ $2k - 2 = 3$ $2k - 2 > 0$

$$2k - 2 = 3 \rightarrow 2k = 5 \rightarrow k = \frac{5}{2} = 2.5$$



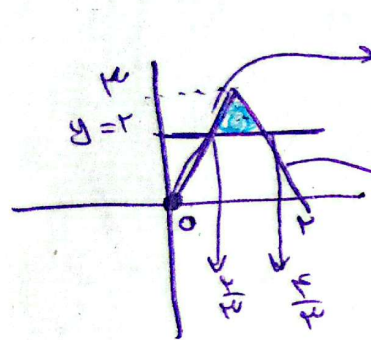
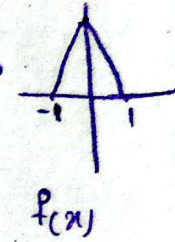
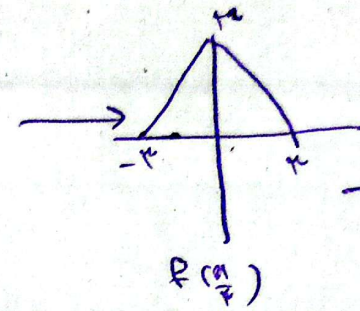
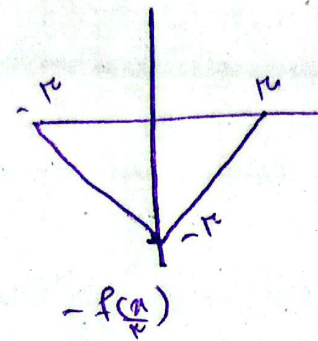
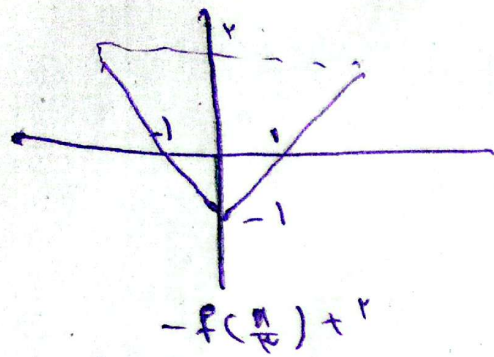
$$f(x) = \frac{2x-1}{x+1} \xrightarrow[\text{به محور طول}]{\text{قرینیت}} -\frac{(2x-1)}{x+1}$$

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

$\leftarrow$ به راست $\frac{x}{k}$ $\frac{2}{k}$ $\frac{1}{k}$

$$\downarrow \frac{-\frac{2}{k}x + 1}{\frac{x}{k} + 1} = \frac{2 - 2x}{x + k}$$

$k=2$ به دلیل اینکه انتقال محور 2 است
 پس باید محور 2 را از 1 به 3 تغییر دهیم $f(x)$



$$(0, 0) (1, r) \quad y = ax + b = rx$$

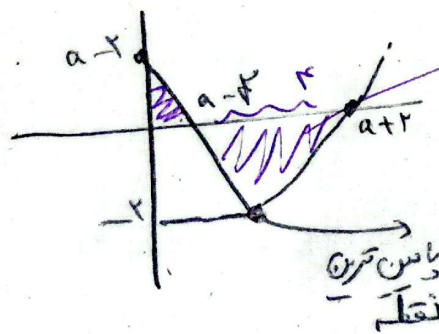
$$a = \frac{\Delta y}{\Delta x} = r$$

$$rx = r \quad x = \frac{r}{r}$$

$$(1, r) (r, 0) \rightarrow y = -rx + r$$

$$\begin{aligned} -rx + r &= r \\ -rx &= 0 \\ x &= 0 \end{aligned}$$

$$b = \left(\frac{r}{r} - \frac{r}{r} \right) 1 = \frac{1}{r}$$



$$\frac{f(x)}{x} + \frac{(a-r)(a-r)}{r} = r, 0$$

$$\frac{1}{x} = \frac{a^2 - fa + r}{r}$$

$$a^2 - fa + r = 1$$

$$a^2 - fa + r = 1$$

$$a^2 - fa + r = 1$$

$$(a-1)(a-r) = 0$$

$$a=1$$

$$a=1$$

$$a-r=0$$

$$a=r$$

$$a=r$$

$$a=r, 0$$

$$f(x) = |x - r| - r$$

$$= \left| \frac{1}{r} - r \right| - r = r - \frac{1}{r} - r = -\frac{1}{r}$$

عنه