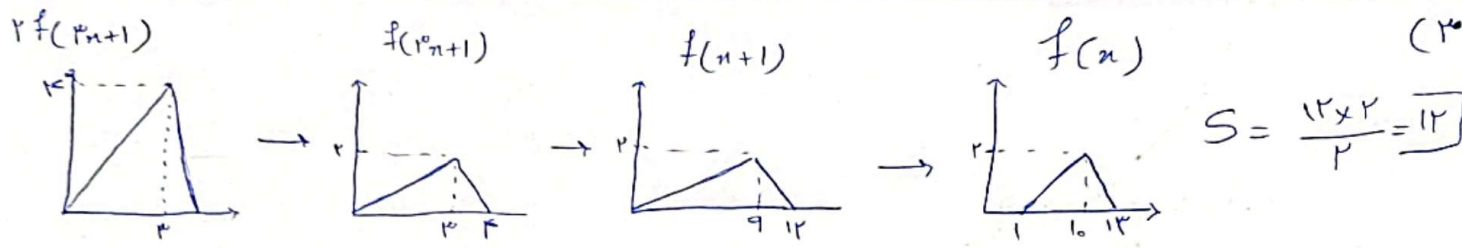
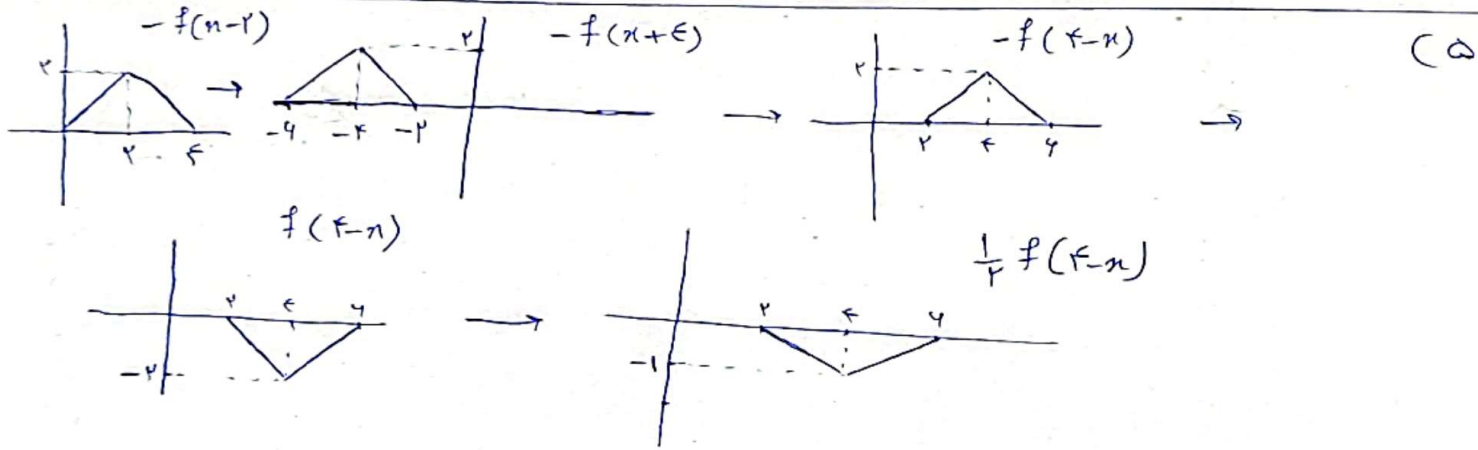


الف) $-r < x_n - r < r \rightarrow -r < x_n < r \rightarrow -\frac{r}{r} < x < \frac{r}{r} \rightarrow D_{f(x-r)} = [-\frac{r}{r}, \frac{r}{r}]$
 ب) $-r < x < r \rightarrow -r < x_n < r \rightarrow -r < x_n - r < r \rightarrow D_{f(x)} = [-r, r]$

$y = x + \sqrt{x-r} \rightarrow y = x-r + \sqrt{x-r} \xrightarrow{y=x-r} x = y-r + \sqrt{y-r} \xrightarrow{y=x} y = x-r + \sqrt{x-r}$
 $y = x-r + \sqrt{x-r} \rightarrow \sqrt{y-r} = r \rightarrow y-r = r^2 \rightarrow y = r^2 + r$



$f(r) = -r$ $x_n - r = a + r f(\frac{x-a}{r}) \rightarrow f(\frac{x-a}{r}) = \frac{r(x-a)-a}{r}$
 $\begin{cases} \frac{x-a}{r} = r \rightarrow (x-a=r) \\ \frac{r(x-a)-a}{r} = -r \rightarrow r(x-a)=r^2-a \end{cases} \rightarrow \begin{cases} -x+a=-r \\ r(x-a)=r^2-a \end{cases} \rightarrow \begin{cases} x=-r \\ a=-r \end{cases}$



$-(x+r) f(x-1) \geq 0$
 $\begin{cases} f(-1)=0 \rightarrow x-1=-1 \rightarrow x=0 \\ f(1)=0 \rightarrow x-1=1 \rightarrow x=2 \\ f(0)=0 \rightarrow x-1=0 \rightarrow x=1 \end{cases}$

	-r	0	1	r
-(x+r)	+	0	-	-
f(x-1)	-	-	+	-
	-	+	-	+

$\rightarrow D_f = [-r, 0] \cup [1, r]$

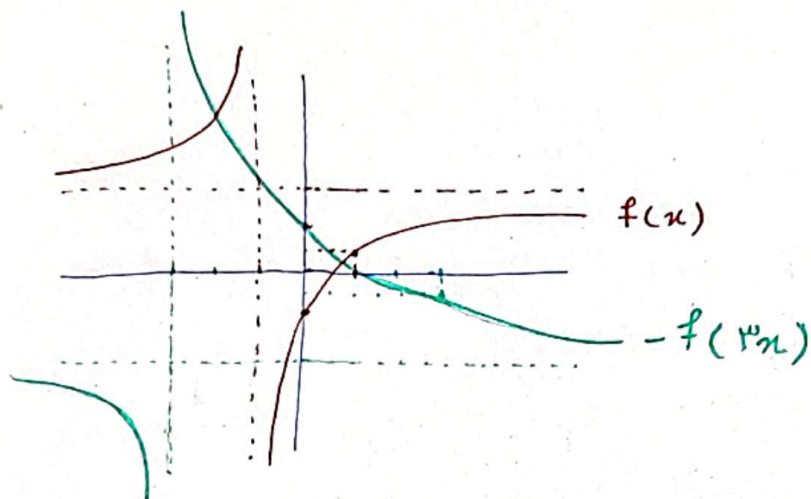
$$f(x) = |2x-3|+1 \xrightarrow{\text{واحد } k} |2(x+k)-3|+1 = |2x+2k-3|-3 \xrightarrow{\text{واحد } 3} |2x+2k-3|-4 \xrightarrow{\text{واحد } 4} |2x+2k-3|-4 \leq \epsilon$$

$$\text{حل موجود} \rightarrow x=0 \rightarrow f(0)=1$$

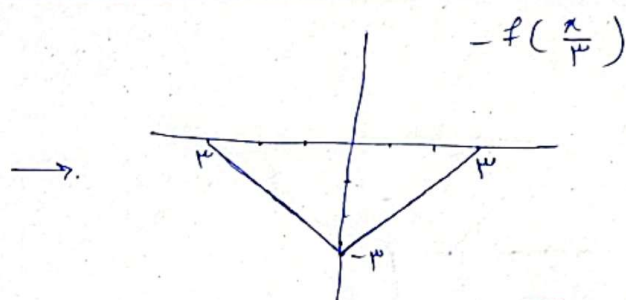
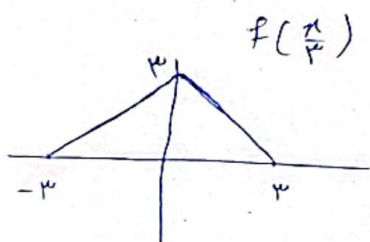
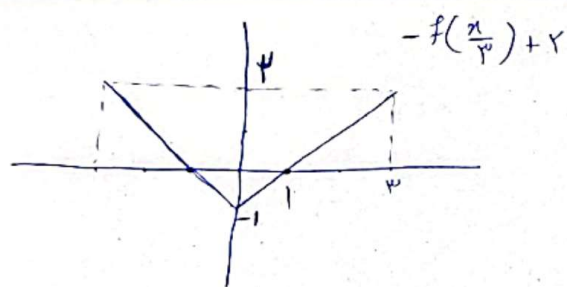
$$\text{روی محور } y \rightarrow g(0) = |2k-3|-4 = \epsilon \rightarrow |2k-3| = 1 \begin{cases} 2k-3=1 \rightarrow k = \frac{4}{2} \checkmark \\ 2k-3=-1 \rightarrow k = -\frac{2}{2} \times \end{cases}$$

$$f(x) = \frac{2x-1}{x+1} \xrightarrow{\text{قرینه}} \frac{1-2x}{x+1} \xrightarrow{\text{برابر کردن مولد}} \frac{1-\frac{2}{3}x}{\frac{x}{3}+1}$$

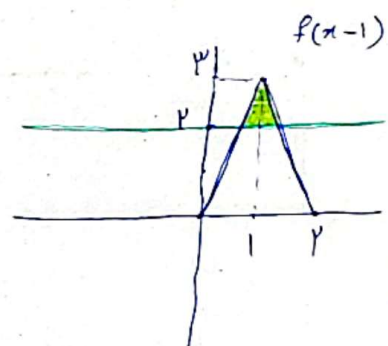
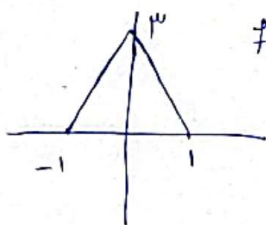
(1)



برای دانستن اینکه نقطه برخورد باید
۴ واحد به بالا انتقال دهیم



$f(x)$



$$\begin{aligned} \int_{-3}^3 x &= 2 \rightarrow x = \frac{2}{3} \\ -3x + 4 &= 2 \rightarrow x = \frac{2}{3} \end{aligned} \rightarrow \frac{2}{3} - \frac{2}{3} = \frac{2}{3} \rightarrow S = \frac{\frac{2}{3} \times 1}{2} = \frac{1}{3}$$

$$f(x) = |x-a|-2$$

$$S = \frac{(a-2)(a-2)}{2} + \frac{(a+2-(a-2)) \times 2}{2} = \frac{9}{2} \rightarrow (10)$$

$$\frac{(a-2)(a-2)}{2} = \frac{1}{\epsilon} \rightarrow (a-2)^2 = 1 \rightarrow$$

$$\begin{cases} a-2=1 \rightarrow a=3 \checkmark \\ a-2=-1 \rightarrow a=1 \end{cases}$$

$$f\left(\frac{1}{3}\right) = \left|\frac{1}{3}-3\right|-2 = \frac{8}{3}-2 = \frac{2}{3}$$

غیر قابل قبول