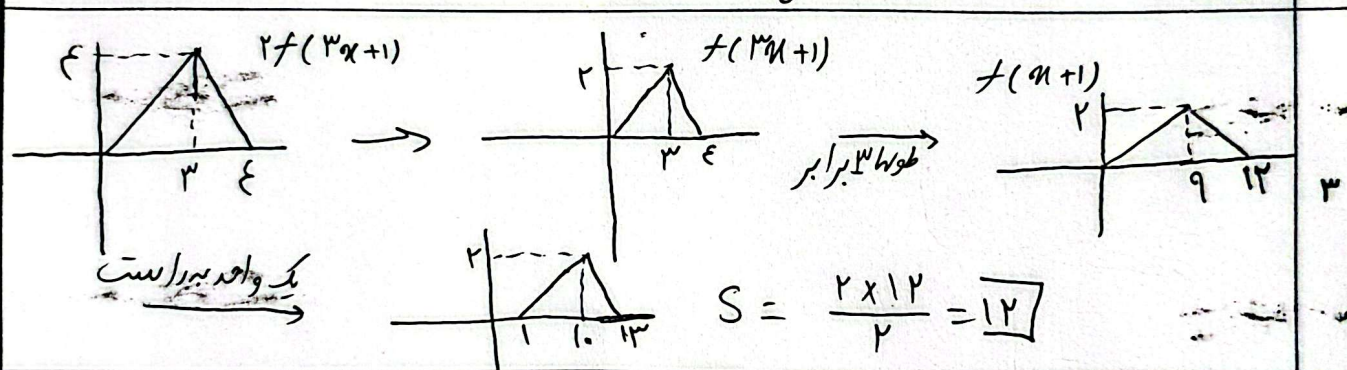


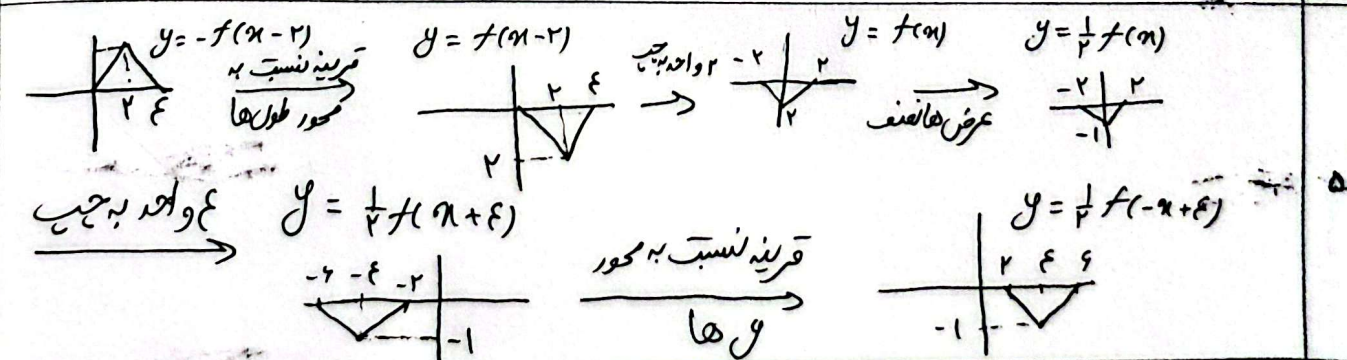
الف) $D_f = [-4, 2]$
 $\Rightarrow -4 \leq 3x - 2 \leq 2$
 $\Rightarrow -2 \leq 3x \leq 4$
 $\Rightarrow -\frac{2}{3} \leq x \leq \frac{4}{3} \Rightarrow D_{f'} = [-\frac{2}{3}, \frac{4}{3}]$

ب) $D_f = [-4, 2]$
 $\Rightarrow \begin{cases} x = -4 \rightarrow 3(-4) - 2 = -14 \\ x = 2 \rightarrow 3(2) - 2 = 4 \end{cases}$
 $\Rightarrow -14 \leq x \leq 4 \Rightarrow D_{f'} = [-14, 4]$

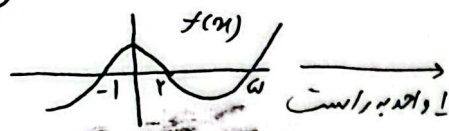
$f(x) = x + \sqrt{x-2}$ $\xrightarrow{\text{۲ واحد به راست}} f(x) = (x-2) + \sqrt{(x-2)-2}$
 چون عرض نقطه برخورد با خط $y=x$ را $x = x-2 + \sqrt{x-4}$ می‌خواهد نیاز به قرینه کردن نسبت به خط $y=x$ نیست زیرا نقاط برخورد همانند
 $\Rightarrow 2 = \sqrt{x-4} \Rightarrow x-4 = 4 \Rightarrow x=8 \xrightarrow{x=8} y = 8-2 + \sqrt{8-4} = 6+2 = 8$



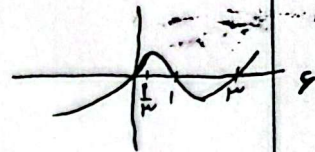
$A(2, -3) \Rightarrow -3 = f(2)$
 $A'(x, 2x-1)$
 $y = a + 2f(\frac{x-a}{2})$
 $\Rightarrow \begin{cases} 2x-1 = a + 2f(\frac{x-a}{2}) \\ \Rightarrow f(\frac{x-a}{2}) = \frac{2x-1-a}{2} \end{cases}$
 $\left. \begin{array}{l} 2 = \frac{x-a}{2} \Rightarrow x-a=4 \\ \frac{2x-1-a}{2} = -3 \Rightarrow 2x-1-a=-6 \Rightarrow 2x-a=-5 \end{array} \right\} \Rightarrow \begin{cases} x-a=4 \\ 2x-a=-5 \end{cases} \Rightarrow \begin{cases} x=3 \\ a=-1 \end{cases}$
 $\Rightarrow a = -1$



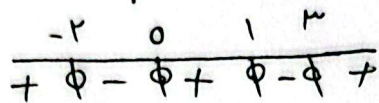
$$y = \sqrt{x+2} f(3x-1)$$



طول $\frac{1}{3}$



$$(x+2) f(3x-1) \leq 0 \rightarrow$$



$$I_f = [-2, 1/3] \cup [1, \infty)$$

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

$$f'(x) = |2(x+k)-3|-2$$

$$\begin{aligned} |2x-3|+1 &= |2(x+k)-3|-2 \\ x=0 \quad | -3|+1 &= |2k-3|-2 \\ \Rightarrow \epsilon &= |2k-3|-2 \end{aligned}$$

$$\Rightarrow |2k-3| = 6 \Rightarrow \begin{cases} 2k-3 = 6 \Rightarrow 2k = 9 \Rightarrow k = 9/2 \checkmark \\ 2k-3 = -6 \Rightarrow 2k = -3 \Rightarrow k = -3/2 \times \end{cases}$$

$$2k-3 = -6 \Rightarrow 2k = -3 \Rightarrow k = -3/2 \times \quad k > 0$$

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

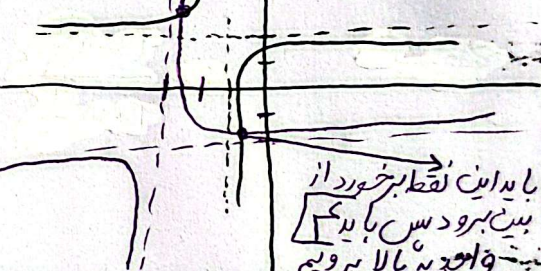
میان افقی = 2
میان عمودی = -1

نقطه ثابت برخورد

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

قرینه نسبت به محور xها

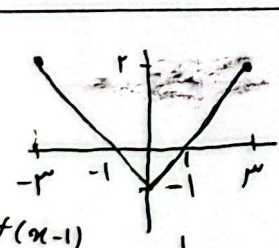
$$\frac{-2x+1}{x+1}$$



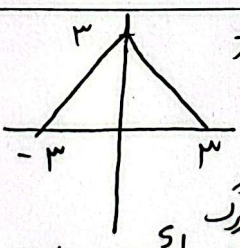
طول $\frac{1}{3}$ برابر

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

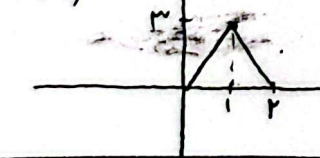
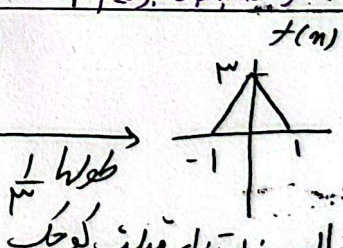
میان افقی: -2
میان عمودی: -3



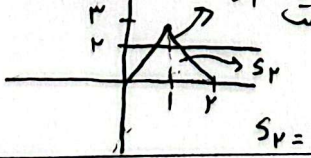
$-f(x/3) + 2$
واحد بیابین
نسبت به قرینه
نسبت به محور xها



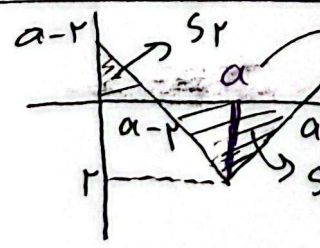
$$f(x/3)$$



S_1
 S_2



تالین: ارتفاع مثلث کوچک
است پس مساحت آن $\frac{1}{9}$ مثلث بزرگ است
 $S_1 = \frac{1}{9} \times \frac{2 \times 3}{2} = \frac{1}{3}$
 $S_2 = S - S_1 = 3 - \frac{1}{3} = \frac{8}{3}$



$a-2$
 $a+2$
 S_1
 S_2

$$\frac{a+2+a-2}{2} = a$$

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

$$\Rightarrow \frac{1}{2} = \frac{(a-2) \times (a-2)}{2} \Rightarrow (a-2)^2 = 1 \Rightarrow a^2 - 4a + 4 = 1 \Rightarrow a^2 - 4a + 3 = 0$$

$$\Rightarrow (a-1)(a-3) = 0 \Rightarrow \begin{cases} a=1 \times \\ a=3 \end{cases}$$

$$a-2 > 0 \Rightarrow a > 2$$

$$a-2 > 0 \Rightarrow a > 2$$