

الف) $-4 \leq x \leq 2 \rightarrow Df(3x-2) \rightarrow -4 \leq 3x-2 \leq 2 \rightarrow -1 \leq 3x \leq 4$

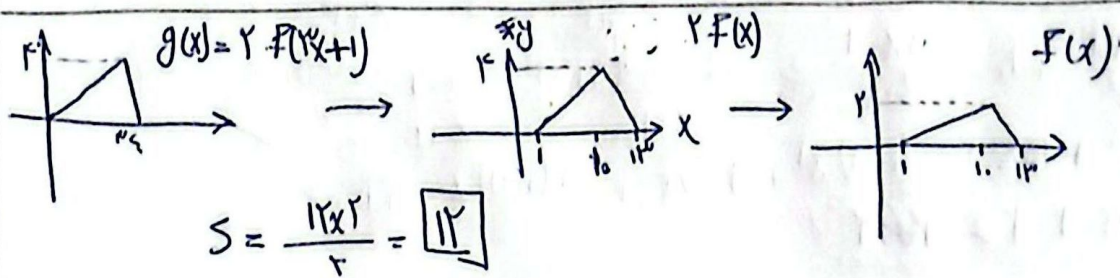
$\Rightarrow \frac{-1}{3} \leq x \leq \frac{4}{3} \rightarrow Df(x) = \left[\frac{-1}{3}, \frac{4}{3} \right]$

ب) $-4 \leq x \leq 2 \rightarrow -14 \leq 3x-2 \leq -1 \Rightarrow Df(x) = \left[\frac{-14}{3}, \frac{-1}{3} \right]$

$f(x) = x + \sqrt{x-2}$ $\xrightarrow{\text{نقطه ۲}}$ $f(x) = x-2 + \sqrt{x-2}$, $y = x$

$\Rightarrow x = x-2 + \sqrt{x-2} \Rightarrow 2 = \sqrt{x-2} \Rightarrow x-2 = 4 \Rightarrow x = 6$, $y = 6-2 + \sqrt{6-2} = 4$

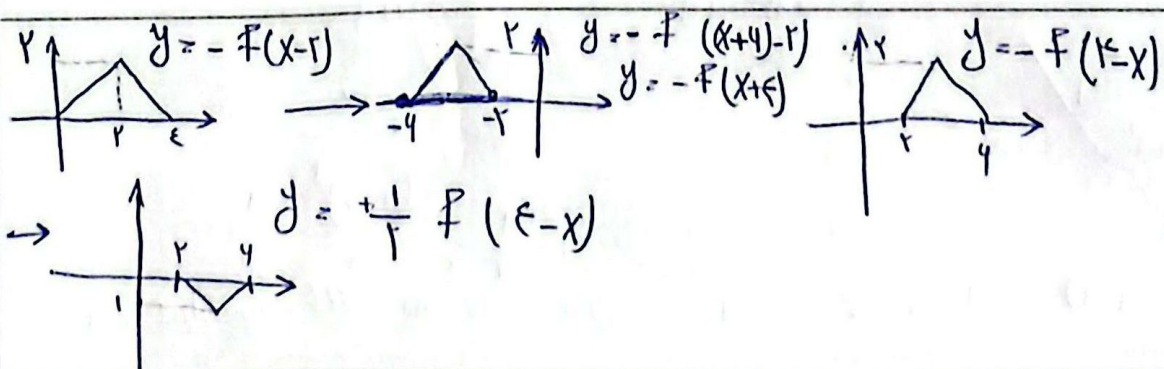
$\Rightarrow$ عرض = ۸ $\xrightarrow{\text{فریب مثبت}}$ $\left| \frac{1}{y-x} \right| \Rightarrow$



$A(2, -3)$, $y = f(x) \Rightarrow f(2) = -3 \Rightarrow \frac{x-a}{1} = 2 \Rightarrow x = a+2$

$y = f(a+2) \Rightarrow y_1 = a-4 \Rightarrow A' = \begin{vmatrix} a+2 \\ a-4 \end{vmatrix} \rightarrow y = 2x-8$

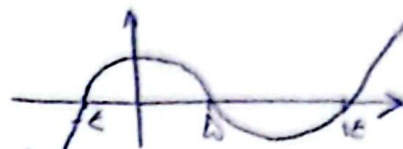
$\Rightarrow a-4 = 2a+8-8 \Rightarrow a = -4$



$$\Rightarrow f(3x-1) \begin{cases} x=-1 \rightarrow x'=-\frac{1}{3} \\ x=2 \rightarrow x'=\frac{1}{3} \\ x=5 \rightarrow x'=\frac{1}{3} \end{cases}$$

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

حاصل
در نقاط
ب.ل



$$\Rightarrow D_f = [-1, 2] \cup [5, 14]$$

$$f(x) = |2x-3|+1 \xrightarrow{\text{نقطه مینیمم در } x=1.5} g(x) = |2x+2k-3|-2$$

$$|2x-3|+1 = |2x+2k-3|-2 \xrightarrow{x=0 \text{ نقطه مینیمم در } f} y = |2k-3|$$

$$\Rightarrow 2k-3 = \pm 4 \Rightarrow k = \frac{7}{2} \text{ حاصل}$$

$$k' = -\frac{3}{2}$$

$$y = -\frac{2x-1}{x+1} \xrightarrow{\text{طول نقاط را برابر}} y = -\frac{2x-3}{x+3} \Rightarrow y = \frac{-2x+3}{x+3}$$

$$\frac{-2x+3}{x+3} + k = \frac{2x-1}{x+1} \Rightarrow \frac{-2x+kx+3k+3}{x+3} = \frac{2x-1}{x+1}$$

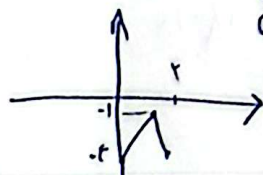
$$\Rightarrow \frac{2x^2+5x-3}{x+3} = \frac{(k-2)x^2+(k-2)x+3(k+1)x+3k+3}{x+3}$$

$$\Rightarrow k-2=2 \Rightarrow k=4$$

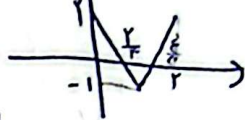
$$y = -f(x)+2$$



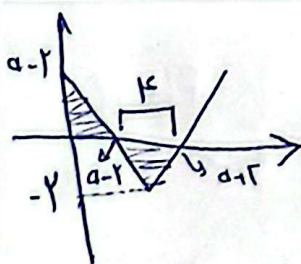
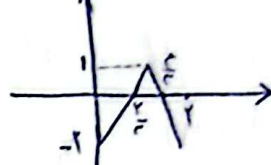
$$y_1 = f(x-1)$$



$$y = -f(x-1)+2$$



$$y = f(x-1)+2$$



$$y = |x|$$

$$S_2 = \frac{1}{2} \times 2 \times 2 = 2$$

$$S_1 + S_2 = \frac{9}{2} \Rightarrow S_1 = \frac{5}{2} \Rightarrow \frac{(a-2)^2}{2} = \frac{5}{2}$$

$$\Rightarrow (a-2) = \pm 3 \Rightarrow a = 5, a = -1 \rightarrow \text{نقطه } \rightarrow \text{مساحت از هر دو برابر است}$$