

نام و نام خانوادگی: نام پدر: نام مادر: شماره کلاس: A

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

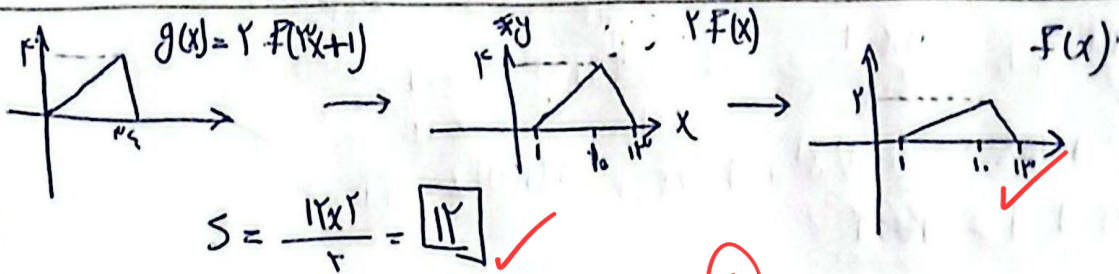
$\Rightarrow -\frac{1}{3} \leq x \leq \frac{4}{3} \rightarrow Df(x) = [-\frac{1}{3}, \frac{4}{3}]$ ✓

ب) $-4 \leq x \leq 2 \rightarrow -14 \leq 3x-2 \leq -1 \Rightarrow Df(x) = [-14, -1]$ ✓ (2)

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

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

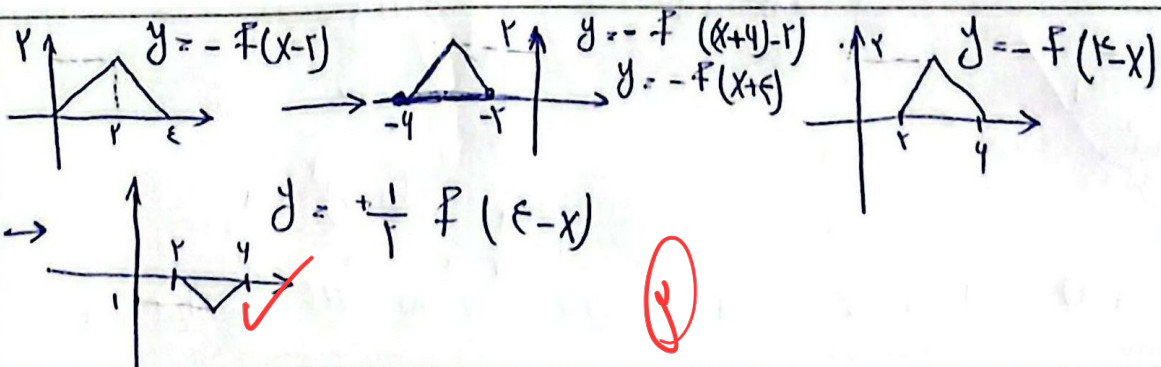
$\Rightarrow$ عرض = 4 (2)



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

$y = a+2, f'(2) = -3 \Rightarrow y_1 = a-4 \Rightarrow A' = \begin{vmatrix} a+2 \\ a-4 \end{vmatrix} \rightarrow y = 2x-8$

$\Rightarrow a-4 = 2a+8-8 \Rightarrow a = -4$ ✓ (2)



$$\begin{aligned} 3a-1 &= 2 \rightarrow a=1 \\ 3a-1 &= 1 \rightarrow a=2 \\ 3a-1 &= -1 \rightarrow a=0 \end{aligned}$$

$$\Rightarrow f(3x-1) \begin{cases} x=-1 \rightarrow x'=-\frac{1}{3} \\ x=2 \rightarrow x'=\frac{1}{3} \\ x=0 \rightarrow x'=0 \end{cases}$$

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



$$D_f = [-2, -\frac{1}{3}] \cup [\frac{1}{3}, 2]$$

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

$$f(x) = |2x-3|+1 \xrightarrow{\text{نقطه مخرج 3 واحد به چپ}} g(x) = |2x+2k-3|-2$$

$$|2x-3|+1 = |2x+2k-3|-2 \xrightarrow{\text{نقطه مخرج 3 واحد به چپ}} 4 = |2k-3|$$

$$\Rightarrow 2k-3 = \pm 4 \Rightarrow k = \frac{7}{2} \text{ or } k = \frac{1}{2} \rightarrow \text{حاصل}$$

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

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

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

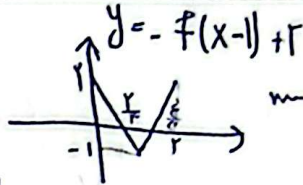
$$\Rightarrow \frac{2x^2+3x-3}{x+3} = \frac{(k-2)x^2+(k-2)x+3(k+1)x+3k+3}{x+3}$$

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

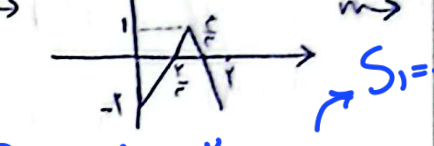
$$y = -f(x)+2$$



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

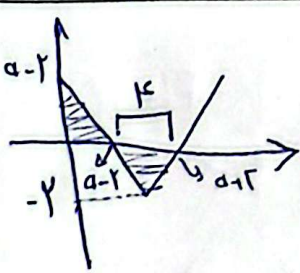


$$y = f(x-1)+2$$



$$S_1 = \frac{1}{3}$$

$$\frac{S_1}{S_2} = \left(\frac{h_1}{h_2}\right)^2 \rightarrow \frac{S_1}{\frac{1}{3}} = \left(\frac{1}{\frac{1}{3}}\right)^2$$



$$y = |x|$$

$$S_2 = \frac{1}{2} \times \frac{1}{2} = \frac{1}{4}$$

$$S_1 + S_2 = \frac{1}{4} \Rightarrow S_1 = \frac{1}{4} \Rightarrow \frac{(a-2)^2}{2} = \frac{1}{4}$$

$$\Rightarrow (a-2) = \pm 1 \Rightarrow a = 3 \text{ or } a = 1 \rightarrow \text{حاصل}$$

$$f\left(\frac{1}{3}\right) = \frac{1}{3}$$