

نام و نام خانوادگی پاسخنامه تشریحی تکلیف شماره ۴ کلاس جزوه شماره A

الف) $D f(t) \rightarrow -4 \leq t \leq 2$

$t = 3x - 2 \rightarrow -4 \leq 3x - 2 \leq 2 \rightarrow -2 \leq 3x \leq 4 \rightarrow -\frac{2}{3} \leq x \leq \frac{4}{3}$

$D_{f(3x-2)} = [-\frac{2}{3}, \frac{4}{3}]$

ب) $D f(3x-2) \rightarrow -4 \leq 3x-2 \leq 2$

$t = 3x - 2 \rightarrow x = \frac{t+2}{3} \rightarrow -4 \leq \frac{t+2}{3} \leq 2 \rightarrow -14 \leq t \leq 4$

$D_{f(t)} = [-14, 4]$

$f(x) = x + \sqrt{x-2}$ $\xrightarrow{\text{واحد راست}} (x-2) + \sqrt{(x-2)-2} = x-2 + \sqrt{x-4} = f'(x)$

$y = x \rightarrow f'(x) \rightarrow f'^{-1}(x)$

$y = x \rightarrow$ نیمساز نامه اول

$f'^{-1}(x) = x = f'(x) \rightarrow x = x - 2 + \sqrt{x-4} \rightarrow 2 = \sqrt{x-4} \rightarrow 4 = x - 4 \rightarrow x = 8$

$f'(8) = 8 - 2 + \sqrt{8-4} = 6$

طول قائمه $\rightarrow t = 3x - 1 \rightarrow \frac{t-1}{3} = x \rightarrow 0 \leq \frac{t-1}{3} \leq 4 \rightarrow 1 \leq t \leq 13$

ارتفاع مثلث $\rightarrow 0 \leq y \leq 4 \rightarrow 0 \leq 2f(t) \leq 4 \rightarrow 0 \leq f(t) \leq 2$ $\rightarrow$ طول ارتفاع = 2

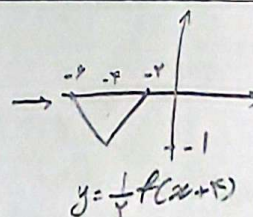
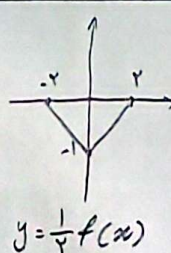
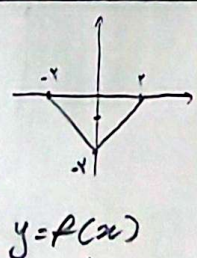
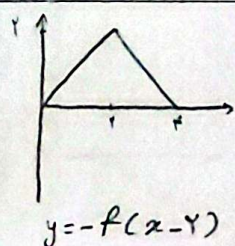
$S = \frac{2 \times 12}{2} = 12$

$y = f(x) \xrightarrow{(2, -3)} f(2) = -3$

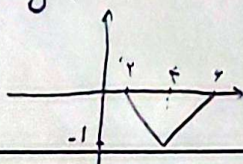
$y = a + 2f(\frac{x-a}{2}) \xrightarrow{(x, 2x-1)} 2f(\frac{x-a}{2}) + a = 2x - 1 \rightarrow f(\frac{x-a}{2}) = \frac{2x-1-a}{2}$

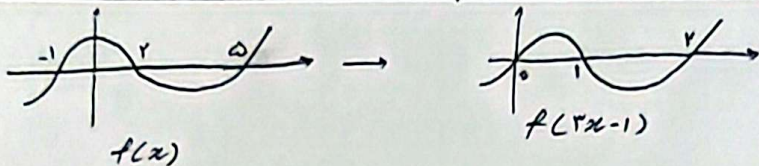
$\frac{x-a}{2} = 2 \rightarrow x-a=4 \rightarrow x=a+4$

$\frac{2x-1-a}{2} = -3 \rightarrow 2x-1-a = -6 \rightarrow 2(a+4)-1-a = -6 \rightarrow a = -9$



$\rightarrow y = \frac{1}{4} f(4-x)$





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

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

$$D_{\frac{1}{\sqrt{-(x+2)f(2x-1)}}} = [-2, 0] \cup [1, 2]$$

$$f(x) = |2x-3|+1 \rightarrow f(x+k) = |2(x+k)-3|+1 \rightarrow f(x+k)-3 = |2(x+k)-3|-2 = g(x)$$

$$f(x) = g(x) \rightarrow f(0) = g(0)$$

$$\rightarrow |2(0)-3|+1 = |2(0+k)-3|-2 \rightarrow |2k-3|=4 \rightarrow \begin{cases} 2k-3=4 \rightarrow k=\frac{7}{2} \text{ GO} \\ 2k-3=-4 \rightarrow k=-\frac{1}{2} \text{ GO} \end{cases}$$

نقطه تلاقی روی محور y $x=0$
شرط مسئله $k>0$

$$f(x) = \frac{2x-1}{x+1} \rightarrow -f(x) = \frac{1-2x}{x+1} \rightarrow -f\left(\frac{x}{3}\right) = \frac{1-\frac{2}{3}x}{\frac{x}{3}+1} = \frac{3-2x}{x+3} \rightarrow -f\left(\frac{x}{3}\right)+a = \frac{3-2x}{x+3} + a = g(x)$$

$$g(x) = f(x) \rightarrow \frac{3-2x}{x+3} + a = \frac{2x-1}{x+1} \rightarrow a = \frac{2x^2+4x-4}{x^2+4x+3} \rightarrow ax^2+4ax+3a = 2x^2+4x-4$$

$$\rightarrow (a-2)x^2 + (4a-4)x + 3a-4 = 0$$

$$\Delta = 0 \rightarrow (4a-4)^2 - 4(a-2)(3a-4) = 16(a-1)^2 - 12(a-2)(a-2)$$

$$= 4a^2 + 4a - 44 = 0 \rightarrow a^2 + 10a - 11 = 0 \rightarrow a = \frac{-10 \pm \sqrt{144}}{2} = -2 \pm \sqrt{41}$$

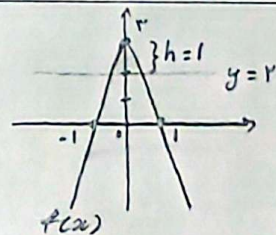
انتخاب $a = \sqrt{41} - 2$ $a > 0$

$$-f\left(\frac{x}{3}\right) + 3 = |x| - 1 \rightarrow f\left(\frac{x}{3}\right) = 3 - |x| \rightarrow f(x) = 3 - |3x|$$

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

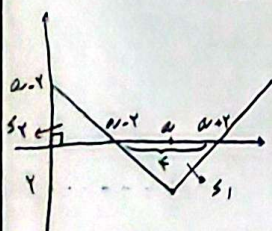
$$|3x-3|=1 \rightarrow \begin{cases} 3x-3=1 \rightarrow x=\frac{4}{3} \\ 3x-3=-1 \rightarrow x=\frac{2}{3} \end{cases} \quad \text{طول} = \frac{2}{3} \quad h=1$$

$$S = \frac{1 \times \frac{2}{3}}{2} = \frac{1}{3}$$



$$f(x) = |x-a| - 2 \rightarrow f(x) = |x-\sqrt{5}| - 2 \rightarrow f\left(\frac{1}{\sqrt{5}}\right) = \left|\frac{1}{\sqrt{5}} - \sqrt{5}\right| - 2 = \frac{4}{\sqrt{5}} - 2$$

$$= \frac{4\sqrt{5} - 10}{5}$$



$$S_1 = \frac{1}{2} (2) (2) = 2$$

$$S_1 + S_2 = 4 \rightarrow S_2 = \frac{1}{2} = \frac{1}{2} (a-2)(a-2) \rightarrow a^2 - 4a + 4 = 1 \rightarrow a = \pm \sqrt{5}$$

$a-2 > 0 \rightarrow a > 2 \rightarrow a = +\sqrt{5}$