Subject: دوازدهم ریاضی A کوهنی ۶ پردیس ایرانی

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۱- الف) $D_{f(x)} = [-4, 2]$ $\quad D_{f(3x-2)} \Rightarrow -4 \le 3x-2 \le 2 \xrightarrow{+2} -2 \le 3x \le 4$

$-\frac{2}{3} \le x \le \frac{4}{3}$

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

ب) $D_{f(3x-2)} = [-4, -2]$ $\quad D_f = [3(-4)-2, 3(-2)-2] = \boxed{[-14, -8]}$

۲- $f(x) = x + \sqrt{x-2}$ $\quad f'(x) = x-2 + \sqrt{x-2-2} = x-2+\sqrt{x-4}$

$\xrightarrow{\text{قرینه}} x = y - 2\sqrt{y-4} \Rightarrow y-2+\sqrt{y-4} = y \Rightarrow \sqrt{y-4} = 2 \Rightarrow y = \boxed{8}$

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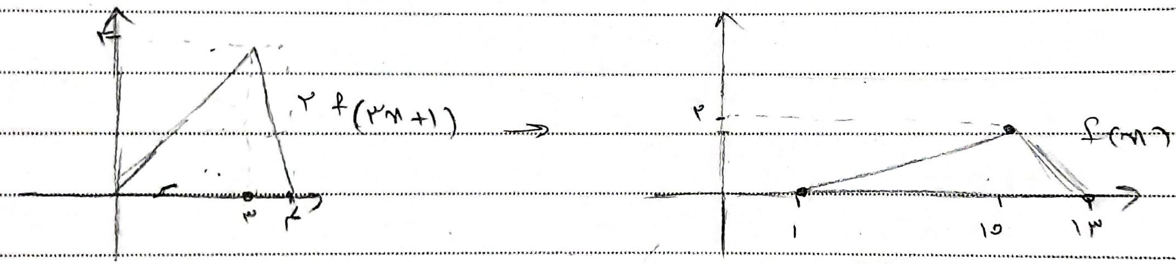

$S = \frac{2 \times (13-1)}{2} = \boxed{12}$

۴- $f(2) = -3 = a + 2f(\frac{x-a}{2})$

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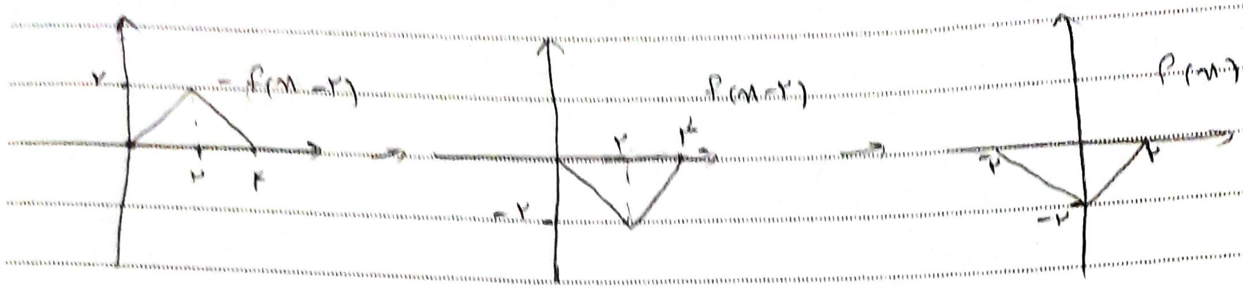

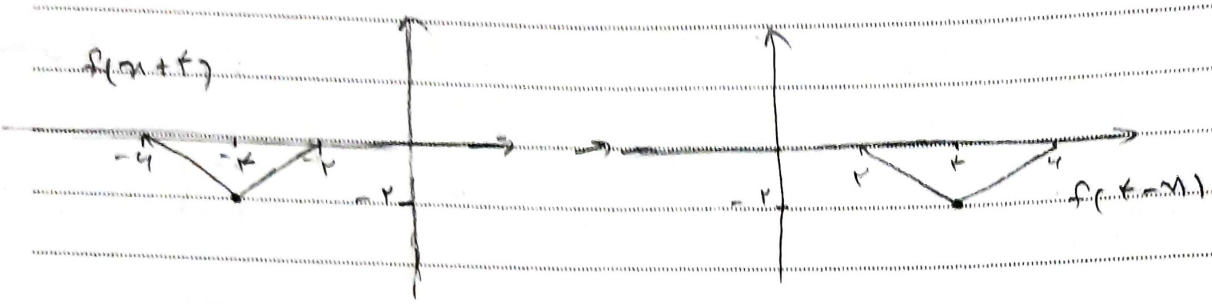

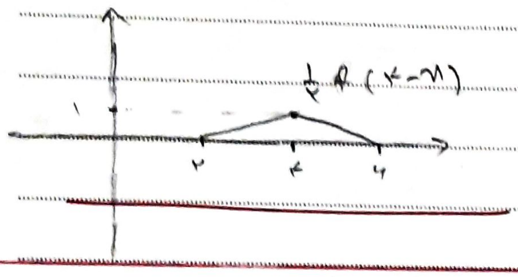

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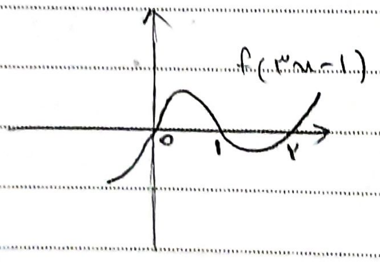
$-(x+2)f(3x-1) \geq 0$



if $f(3x-1) > 0 \to -(x+2) > 0$

I $x > 2$ یا $0 < x < 1$ II $x < -2$ $\to I \cap II = \emptyset$

if $f(3x-1) < 0 \to -(x+2) < 0$

$1 \leq x \leq 2$ یا $x \leq 0$ $x \geq -2$ $\to x \in [-2, 0] \cup [1, 2]$

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

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

$\xrightarrow{x=0} f(x) = g(x) \Rightarrow |-3| + 1 = |2k - 3| - 2 \Rightarrow |2k-3| - 2 = 4 \Rightarrow |2k-3| = 6$

$2k - 3 = 6 \Rightarrow k = \boxed{\frac{9}{2}}$ ق ق

$2k - 3 = -6 \Rightarrow k = -\frac{3}{2}$

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$f(x) = \frac{2x-1}{x+1} \Rightarrow f'(x) = -\left(\frac{\frac{2x}{3} - 1}{\frac{x}{3} + 1}\right) + k = -\left(\frac{2x-3}{x+3}\right) + k$

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

$\Rightarrow \frac{2x^2 - x + 6x - 3 + 2x^2 + 2x - 3x - 3}{x^2 + 4x + 3} = \frac{4x^2 + 4x - 6}{x^2 + 4x + 3} = k$

$\Rightarrow 4x^2 + 4x - 6 = kx^2 + 4kx + 3k$

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$y_1 = f(\frac{x}{3}) + 2 \Rightarrow D = [-3, 3]$ $D_{f(x)} = [-1, 1]$

$R = [-1, 2]$ $R_{f(x)} = [0, 3] = R_{(f(x-1))}$

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

$-|2x - 1| + 1$

$\Rightarrow R_{f(x-1)} = [0, 3]$

$\frac{(a-2)^2}{2} + \frac{(a+2-(a-2)) \times 2}{2} = \frac{9}{2} \Rightarrow \frac{(a-2)^2}{2} = \frac{1}{2}$

$\Rightarrow (a-2)^2 = 1 \Rightarrow a = 3$

$a = 1 \Rightarrow a - 2 < 0$ غ ق

$f(\frac{1}{2}) = |\frac{1}{2} - 3| - 2 = \boxed{\frac{1}{2}}$