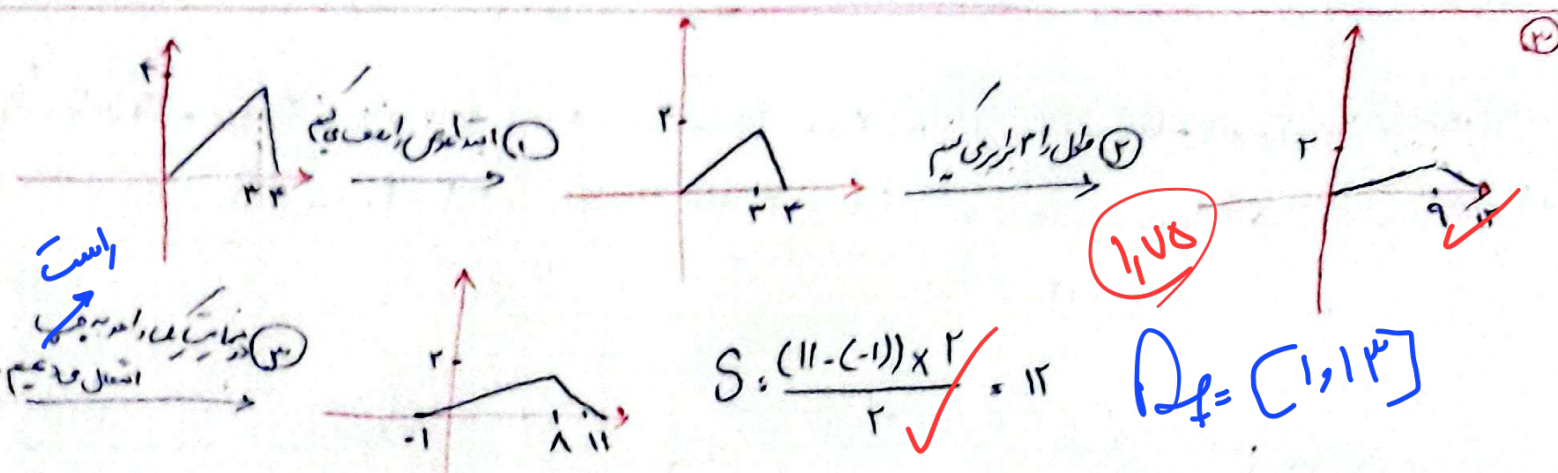


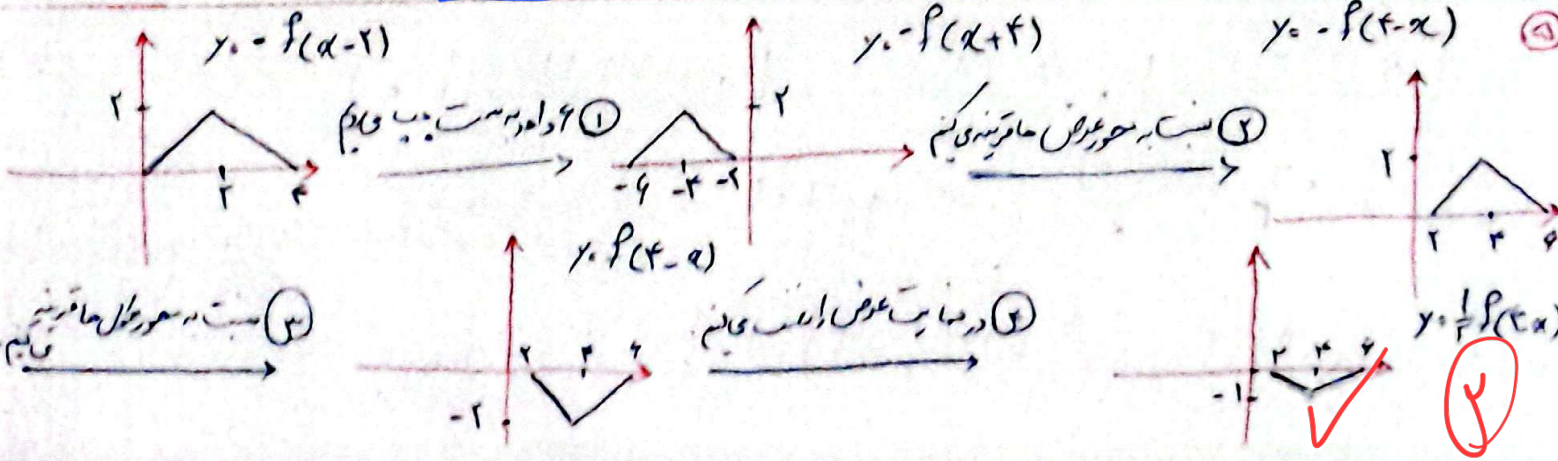
1) $-4 \leq f(x) \leq 2 \Rightarrow -4 \leq 2x-2 \leq 2 \Rightarrow -2 \leq x \leq 2 \Rightarrow D_{f(x)} = [-2, 2]$ ①

2) $D_{f(2x-1)} = [-4, 2] \Rightarrow ① \ 2x-1 \in [-4, 2] \Rightarrow 2x \in [-3, 3] \Rightarrow x \in [-1.5, 1.5]$ ②
 $\Rightarrow D_{f(x)} = [-1.5, 1.5]$ ③

$f(x) = x \cdot \sqrt{x-2}$ ① $f(x) = x-2 \cdot \sqrt{x-4} = (\sqrt{x-4} + \frac{1}{\sqrt{x-4}})' + \frac{1}{\sqrt{x-4}}$ ②
 $y = \sqrt{x-4} + \frac{1}{\sqrt{x-4}} \Rightarrow y - \frac{1}{\sqrt{x-4}} = \sqrt{x-4} \Rightarrow y^2 - \frac{2}{y} = x-4 \Rightarrow x = y^2 - \frac{2}{y} + 4$
 $\Rightarrow y = \sqrt{x-4} + \frac{1}{\sqrt{x-4}} \Rightarrow y - \frac{1}{\sqrt{x-4}} = \sqrt{x-4} \Rightarrow y^2 - \frac{2}{y} = x-4 \Rightarrow x = y^2 - \frac{2}{y} + 4$
 $\Rightarrow y = \sqrt{x-4} \Rightarrow x-4 = 4 \Rightarrow x = 8$ ③ $y = 8$ سؤال عرض واحد



$A(2, -3) \Rightarrow y = f(x) \xrightarrow{\text{مقلبات}} A'(x', y') \Rightarrow y = a + 2f(\frac{x-a}{2})$ ①
 $A'(x', y') \xrightarrow{\text{مقلبات}} y = 2x - 1 \Rightarrow y' = 2x' - 1 \Rightarrow \frac{x-a}{2} = 2 \Rightarrow x = a + 4$
 $\frac{y-a}{2} = -3 \Rightarrow y = a - 6$
 $a - 6 = 2(a + 4) - 1 \Rightarrow a = -9$



در شکل متصدي شود که تابع ۳ صفر دارد، همچنین ريشی $2, (x+2) - 2$ است که در نده قرار ندارد پس ريشی $f(2x-1)$ ندارد.

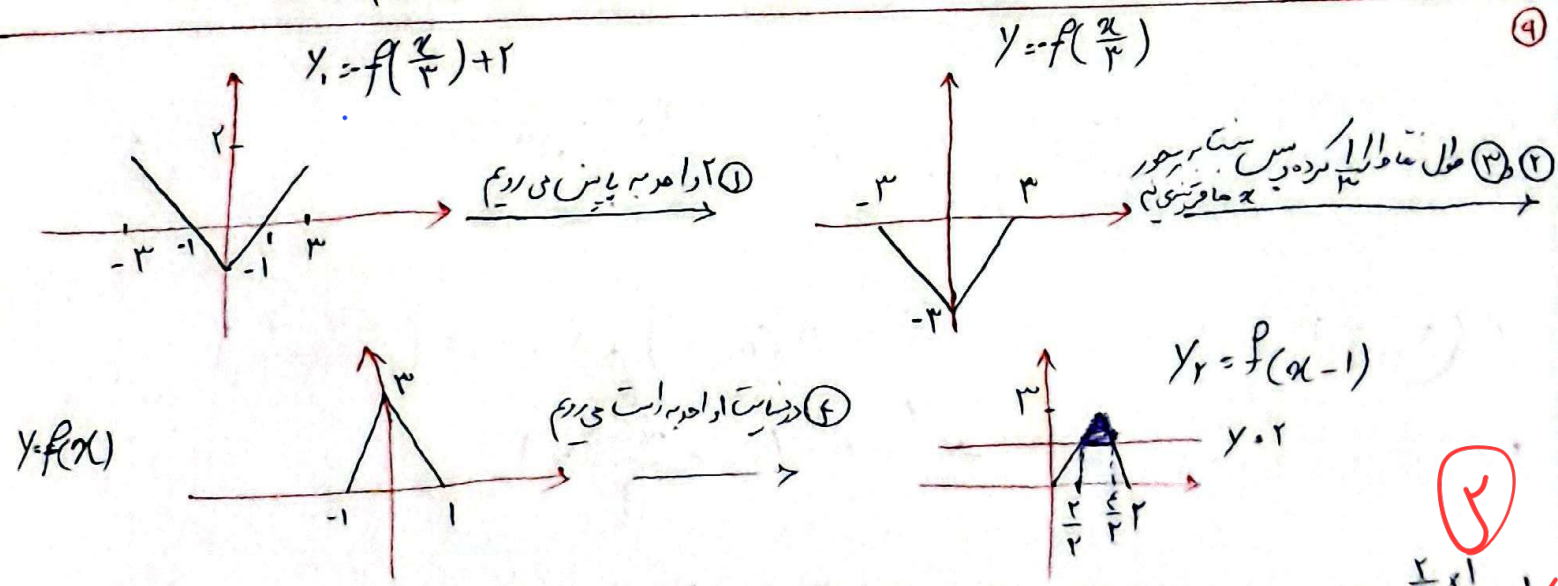
$y = \sqrt{-(x+2)f(2x-1)}$

$$\left. \begin{aligned} \textcircled{1} & \rightarrow 2x-1=5 \Rightarrow x=3 \\ \textcircled{2} & \rightarrow 2x-1=2 \Rightarrow x=1.5 \\ \textcircled{3} & \rightarrow 2x-1=-1 \Rightarrow x=0 \end{aligned} \right\} \quad \frac{-2}{+} \frac{0}{+} \frac{1}{-} \frac{2}{+} \Rightarrow D_f = [-2, 0] \cup [1, 3]$$

$f(x) = |2x-3|+1$ و $g(x) = |2x-3+k|-2$ تابع در $x=0$ متساويانند $\textcircled{1}$
 $|2x-3|+1 = |2x-3+k|-2 \Rightarrow 4 = |k-3|-2 \Rightarrow 6 = |k-3| \Rightarrow k=9 \Rightarrow k=9 \checkmark = 6.5$
 $f(x) = |2(x+k)-3|-2 \rightarrow g(x) = |2x-3|-2$ $f \leq 3-k-2 \Rightarrow k \leq -3 \times k$

$f(x) = \frac{2x-1}{x+1}$ $f'(x) = \frac{-\frac{2x-1}{x+1} - 1}{\frac{-x}{x+1} + 1} = \frac{-\frac{2x-1}{x+1} - 1}{\frac{-x+1}{x+1}} = \frac{2x+2}{x-3}$ $\textcircled{1}$

$f'(x) + a = f(x) \Rightarrow \frac{2x-1}{x+1} = \frac{2x+2}{x-3} + a \Rightarrow \frac{2x-1}{x+1} = \frac{2x+2+a(x-3)}{x-3}$
 $(a-4)x^2 + 4x(a-1) + 3a+4 \rightarrow \Delta = 0$ جواب X
 $\Rightarrow (x+1)(2x+3+ax+3a) = (2x-1)(x-3) \Rightarrow 2x^2 + 3x + ax^2 + 3ax + 3a = 2x^2 - 5x + 3 \Rightarrow (a+2)x^2 + (3+a)x - 2 = 0$
 $\Rightarrow (a+2)x^2 + (3+a)x - 2 = 0 \Rightarrow a = 0$



$2x=2 \Rightarrow x_1 = \frac{2}{3}, 4-2x=2 \Rightarrow x_2 = \frac{2}{3} \Rightarrow \frac{2}{3} - \frac{2}{3} \leq \frac{2}{3} \text{ و } 3-2=1 \Rightarrow S_1 = \frac{2}{3} \times \frac{1}{2} = \frac{1}{3}$
 $S_1 = \left| \frac{(a-2)(a-2)}{2} \right| + \frac{(a-2)^2}{2}, S_2 = \left| \frac{(a+2)-(a-2))x-2}{2} \right| + 4$
 $\Rightarrow f + \frac{(a-2)^2}{2} \cdot \frac{1}{2} \Rightarrow \frac{(a-2)^2}{2} \leq \frac{1}{2} \Rightarrow (a-2)^2 \leq 1 \Rightarrow a-2 \leq 1 \Rightarrow a \leq 3$
 $\Rightarrow f(x) = |x-3|-2 \rightarrow f(\frac{1}{2}) = |\frac{1}{2}-3|-2 = |-\frac{5}{2}|-2 = \frac{5}{2} \checkmark$