عسل طاوس

سوال ← $f(x)$ $\quad D_f(x) = [-2, 4]$

$f\left(\frac{3x+2}{5}\right) \longrightarrow -2 \leq \frac{3x+2}{5} \leq 4$

$\longrightarrow -10 \leq 3x+2 \leq 20 \longrightarrow -12 \leq 3x \leq 18$

$\longrightarrow -4 \leq x \leq 6$

سوال ۲ ← $f(3x-2)$ $\quad D[-2, 3]$

$\hookrightarrow 3(-2)-2 = -8$

$\hookrightarrow 3(3)-2 = 7$ $\quad \Rightarrow [-8, 7]$

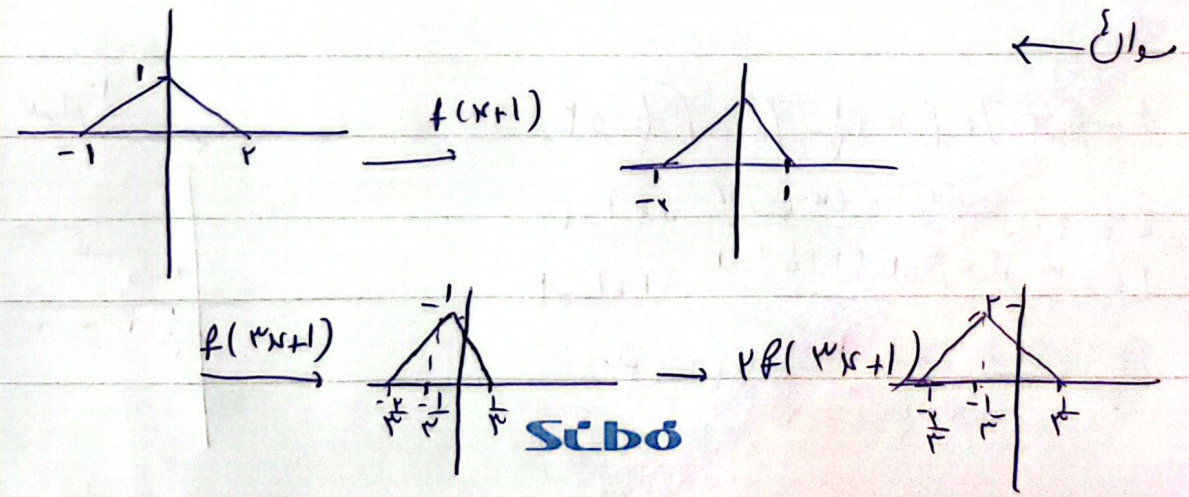
سوال ۳ ← $f(x) = \left(\frac{3x+1}{2}\right) \xrightarrow{D_f=[-1,3]} (-1, 5)$

$f(2-5x) \longrightarrow -1 \leq 2-5x \leq 5$

$\hookrightarrow -3 \leq -5x \leq 3 \rightarrow -\frac{3}{5} \leq x \leq \frac{3}{5}$

$\longrightarrow D_f = [-\frac{3}{5}, \frac{3}{5}]$

سوال ۴ ←



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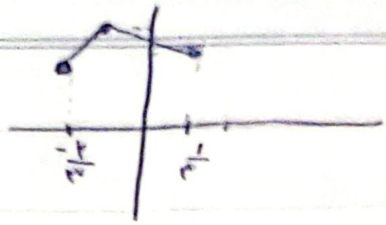
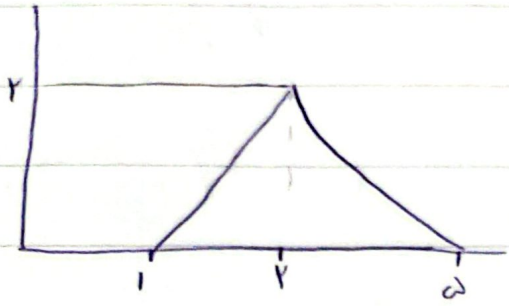
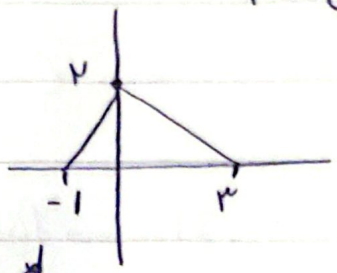
$\longrightarrow 2f(3x+1)+3$



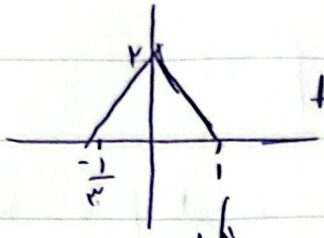
سوال ۳ ←



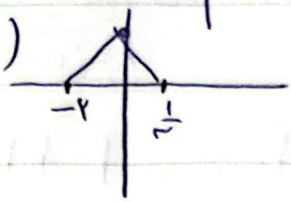
$\xrightarrow{f(x+2)}$



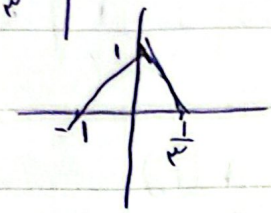
$\xrightarrow{f(3x+2)}$



$\xrightarrow{f(-3x+2)}$



$\xrightarrow{\frac{1}{2}f(2-3x)}$



سوال ۶ ←

$y = a(x-4)^2+3 \xrightarrow{a=\frac{1}{3}} -\frac{1}{3}(x-4)^2+3$

$\longrightarrow 9=(x-4)^2 \longrightarrow x-4 \xrightarrow{-3} \boxed{x=7}$

$\xrightarrow{+3} \boxed{x=1}$

سوال ۷ ←

$(4,1) \longrightarrow$ رئیس سهمی $\quad 3x+2=1 \longrightarrow x=-\frac{1}{3}$

$1-2(4)=-7 \longrightarrow \alpha\beta=\boxed{\frac{7}{3}}$

سوال ۸ ←

$D_f=[a,4] \quad y=f(x-1)+g(x+1)$

$[a+1, 5] \leftarrow \quad \rightarrow [-2, b-1]$

$D_g=[-1,b]$

$-1 \le x+1 \le b \rightarrow -2 \le x \le b-1$

$\longrightarrow b-1=5 \rightarrow b=6$

$a+1=-2 \rightarrow a=-3$

$a-b=-3-6=\boxed{-9}$

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سوال ۹ ←

$y_1 = f(\frac{x}{2}+1)$

$D_f = [-3, 5] \to -\frac{3}{2}+1 = -\frac{1}{2}$, $\frac{5}{2}+1 = \frac{7}{2}$ $\Big\} \to D = [-\frac{1}{2}, \frac{7}{2}]$

$R_f = [-1, 2] \longrightarrow [-2, 2] \xrightarrow{-3} [-5, 1] \longrightarrow [0, 5]$

$\longrightarrow [0, \sqrt{5}]$

سوال ۱۰ ←

$f(x-2)+1 \longrightarrow \left|\frac{(x-2)+1}{2(x-2)+1}\right| + 1$

$\longrightarrow \left|\frac{x-1}{2x-3}\right| + 1 \longrightarrow \left|\frac{x-1}{2x-3}\right| < -x-1$

سه سوال نیست

پس باید بزرگتر از صفر باشد

$\longrightarrow -x-1 > 0 \longrightarrow x < -1$ ①

پس مدلت در قدر مطلق منفی و خرج هم میذاریم که مثبت هست

$\longrightarrow x+1+\frac{x-1}{2x-3} < 0 \to \frac{(x+1)(2x-3)+(x-1)}{2x-3} < 0$

$\longrightarrow 2x^2-4 = 2(x^2-2) \to \frac{2(x^2-2)}{2x-3} < 0$

		$-\sqrt{2}$		$\sqrt{2}$		$\frac{3}{2}$	
② →	−		+		−		+

$\longrightarrow$ ① ∩ ② $\to (-\infty, -\sqrt{2})$