

۱۹/۲۵ آفرین!

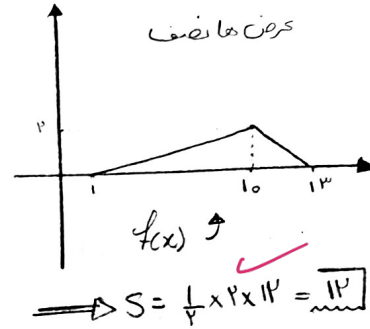
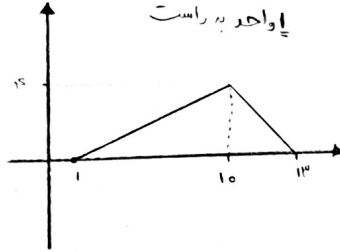
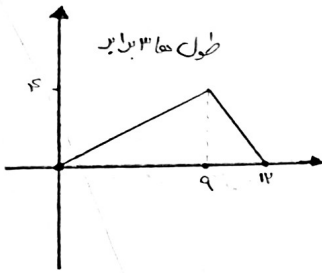
امین جلالی

الف) $D_x f = [4, 2] \xrightarrow{\text{واحد به راست}} [2, 4] \xrightarrow{\text{طول ها برابر}} [-\frac{2}{10}, \frac{4}{10}]$

ب) $D_x f_{x-2} = [-4, 2] \xrightarrow{\text{طول ها مساوی}} [-2, 4] \xrightarrow{\text{نسبت ۱:۱}} D(f) = [14, -1]$

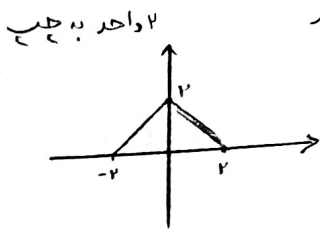
نسبت $f(x-2) = x-2 + \sqrt{x-4} \Rightarrow y = x-2 + \sqrt{x-4} \xrightarrow{\text{قرینه نسبت } y=x} x = y-2 + \sqrt{y-4}$

$\Rightarrow y-2 + \sqrt{y-4} = y \Rightarrow \sqrt{y-4} = 2 \Rightarrow y = 8$ ✓

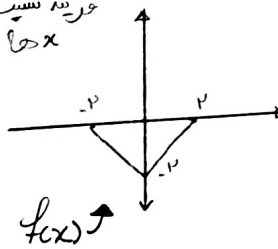


$\frac{x-a}{p} = 2 \Rightarrow x-a = 2p \Rightarrow x = 2p+a$

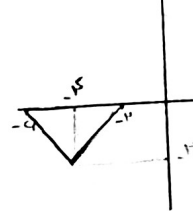
$a + \frac{2p(x-a)}{p} = 2x-1 \Rightarrow a-4 = 2x-1 \Rightarrow x = \frac{a+2}{2}$ } $f+a = \frac{a+2}{2} \Rightarrow a = -4$ ✓



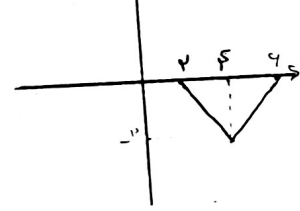
قرینه نسبت به محور x



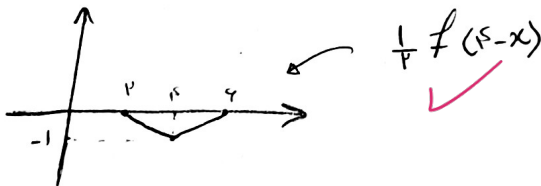
۴ واحد به چپ

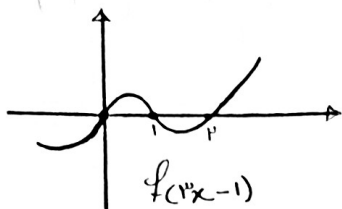


قرینه نسبت به y ها



انقباض عمودی
باضرب ۲





$$\Rightarrow -(x+2) \neq (3x-1) \geq 0 \Rightarrow (x+2) \neq (3x-1) < 0$$

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

$$\Rightarrow D_{f,g} = [-2, 0] \cup [1, 2]$$

$$k > 0 \Rightarrow |2(x+k)-3|+1 \xrightarrow{\text{واحد باس}} |2x+2k-3|-2 = g(x)$$

$$\Rightarrow x=0 \rightarrow f(0)=5 \Rightarrow g(0)=5 \Rightarrow |2k-3|-2=5 \Rightarrow 2k-3=7 \rightarrow k=5, \checkmark$$

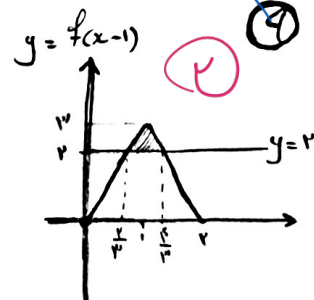
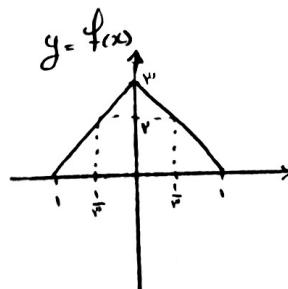
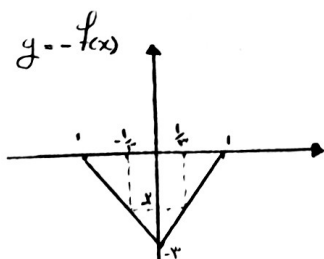
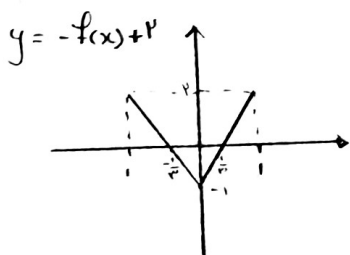
$$2k-3=-7 \rightarrow k=-2, \text{ با توجه به شرط اول مسئله}$$

$$\rightarrow -\left(\frac{3x-1}{x+1}\right) \xrightarrow{\text{مخرج با هم ضرب}} \frac{-\frac{3}{x}+1}{\frac{x}{x}+1} \xrightarrow{a>0} \frac{-\frac{3}{x}+1}{\frac{x}{x}+1} + a \rightarrow \frac{-\frac{3}{x}+1}{\frac{x}{x}+1} + a$$

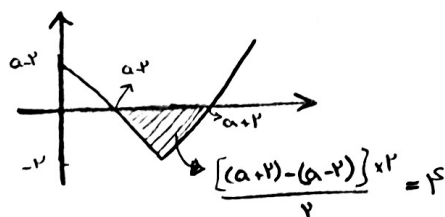
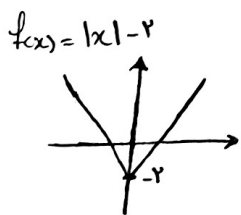
$$\Rightarrow \frac{-\frac{3}{x}+1}{\frac{x}{x}+1} + a = \frac{3x-1}{x+1} \Rightarrow \frac{-3x+1+ax+3a}{x+1} = \frac{3x-1}{x+1} \xrightarrow{\text{مخرج با هم ضرب}} \frac{-3x+1+ax+3a}{x+1} = \frac{3x-1}{x+1}$$

$$\xrightarrow{\text{مخرج با هم ضرب}} \frac{1+ax+3a}{x+1} = \frac{3x-1}{x+1} \Rightarrow 1+ax+3a = 3x-1 \Rightarrow 4x+ax^2+3ax+4+ax+3a = 3x^2+x+3x+3 \Rightarrow (3-a)x^2+(4-a)x-4-3a$$

$$\Rightarrow \Delta=0 \Rightarrow \frac{(3-a)^2 \pm \sqrt{5(3-a)(-4-3a)}}{1-3a} = 0 \Rightarrow 5a^2-11a+11=0 \Rightarrow a-2a+21=0 \Rightarrow a= \frac{11 \pm \sqrt{11}}{4}$$



$$\Rightarrow S = 1 \times \frac{1}{3} \times \frac{1}{3} = \frac{1}{9}$$



$$\Rightarrow \frac{(a-2)^2}{9} = \frac{4}{9} - 1 = -\frac{5}{9}$$

$$\Rightarrow a \rightarrow 1 \rightarrow \text{چون در } x=1 \text{ و } x=-1 \text{ مقدار } f(x) \text{ برابر است}$$

$$\Rightarrow f\left(\frac{1}{3}\right) = \left|\frac{1}{3}-2\right| = \frac{5}{3}$$