

$f(3x-2) \Rightarrow D_f = [-4, 5]$

$f(x) \Rightarrow D_f = \mathbb{R}$
 $-4 \leq 3x-2 \leq 5 \Rightarrow -12 \leq 3x \leq 9 \Rightarrow$
 $\Rightarrow -14 \leq 3x-2 \leq -1 \Rightarrow D_f = [-14, -1]$ ✓

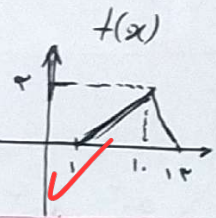
۱- $f(x) \Rightarrow D_f = [-4, 5]$

$f(3x-2) \Rightarrow D_f = \mathbb{R}$
 $-4 \leq 3x-2 \leq 5 \Rightarrow$
 $\Rightarrow -2 \leq 3x \leq 7 \Rightarrow -\frac{2}{3} \leq x \leq \frac{7}{3}$
 $D_f = [-\frac{2}{3}, \frac{7}{3}]$ ✓

۲ $f(x) = x + \sqrt{x-2} \Rightarrow (x-2) + \sqrt{(x-2)-2} = x-2 + \sqrt{x-4} \Rightarrow$
 تبدیل آن نسبت به $x-2$ برابر با خودش است
 $x-2 + \sqrt{x-4} = x \Rightarrow \sqrt{x-4} = 2 \Rightarrow x-4 = 4 \Rightarrow x = 8 \Rightarrow y = 8$ ✓

۳ $f(3x+1) \Rightarrow D = [0, 4] \Rightarrow 0 \leq x \leq 4 \Rightarrow 1 \leq 3x+1 \leq 13$

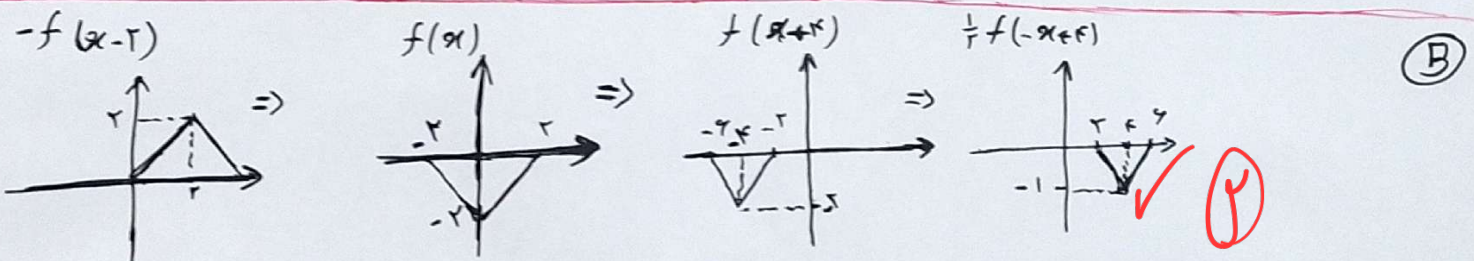
$S = \frac{12 \times 2}{2} = 12$ ✓



$A(2, -2) \Rightarrow f(y) = -2$ $A' \xrightarrow{y=2x-1} (x \in [2x-1])$

$A'(x \in [2x-1]) \Rightarrow y = a + 2f\left(\frac{x-a}{2}\right) = 2x-1 \Rightarrow f\left(\frac{x-a}{2}\right) = \frac{2x-1-a}{2}$

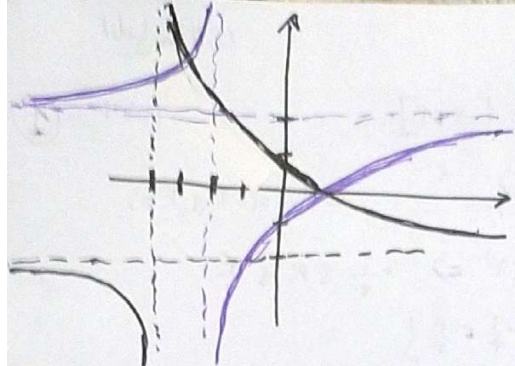
$\begin{cases} \frac{x-a}{2} = 2 \Rightarrow x-a = 4 \\ \frac{2x-1-a}{2} = -2 \Rightarrow 2x-a = -3 \end{cases} \Rightarrow \begin{cases} x-a = 4 \\ 2x-a = -3 \end{cases} \Rightarrow \begin{cases} x-a = 4 \\ -2x+2a = -7 \end{cases} \Rightarrow \begin{cases} x-a = 4 \\ -2x+2a = -7 \end{cases} \Rightarrow a = -9$ ✓



۶ $\sqrt{-(x+2)f(3x+1)} \Rightarrow -(x+2)f(3x+1) \geq 0 \Rightarrow (x+2)f(3x+1) \leq 0$
 $f(x) \Rightarrow$ $\Rightarrow f(3x+1)$
 $D = [-2, 0] \cup [16, 2]$ ✓

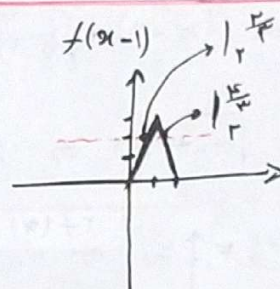
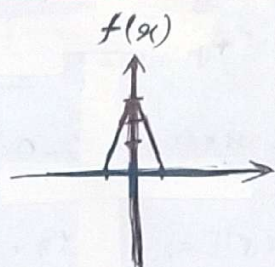
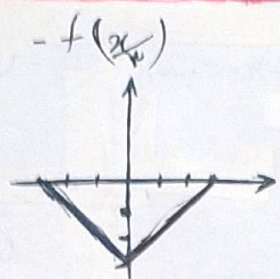
۷ $f(x) = |2x-3|+1 \Rightarrow |2(x+k)-3|+1-2 = |2x+2k-3|-2$
 نقطه برخورد $\Rightarrow x=0 \Rightarrow |2k-3|-2 = |-3|+1 = 4 \Rightarrow |2k-3| = 9 \Rightarrow 2k-3 = 9 \Rightarrow 2k = 12 \Rightarrow k = 6$ ✓

۸ $\frac{2x-1}{x+1} \xrightarrow{\text{تقسیم بر مخرج}} \frac{1-2x}{x+1} \xrightarrow{\text{تقسیم بر مخرج}} \frac{1-\frac{2x}{3}}{\frac{x}{3}+1} = \frac{3-2x}{x+3}$



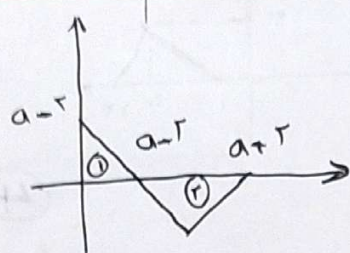
مردودار را $\frac{1}{r}$ واحد بالاییم فقط $\Rightarrow$
در یک نقطه اشتراک دارند.

(4)



$$S = \frac{\frac{1}{r} \times 1}{r} = \frac{1}{r^2}$$

(4)



$$S_1 = \frac{(a-r)(a-r)}{r} = \frac{(a-r)^2}{r} = \frac{a^2 - 2ar + r^2}{r}$$

$$S_r = \frac{r \times r}{r} = r$$

$$S_1 + S_r = \frac{a^2 - 2ar + r^2}{r} + r = \frac{a^2 - 2ar + r^2 + r^2}{r} = \frac{a^2 - 2ar + 2r^2}{r} = \frac{a^2}{r} = \frac{9}{r} \Rightarrow \frac{a^2}{r} = \frac{9}{r} \Rightarrow a^2 = 9 \Rightarrow a = 3$$

$$\Rightarrow a^2 - 2ar + r^2 = 0 \Rightarrow (a-r)^2 = 0 \Rightarrow a = r$$

$$f(x) = |x-3| - r \Rightarrow$$

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

(4)