

دامنه $f(x) = [-2, 4]$ دامنه $f(\frac{x+2}{5})$ به $-2 \leq \frac{x+2}{5} \leq 4 \rightarrow -10 \leq x+2 \leq 20$ (۱) (۲)

$\rightarrow -12 \leq x \leq 18 \rightarrow [-12, 18]$ دامنه $f(\frac{x+2}{5})$ به $D_f = [-4, 6]$

رابطه شیب و ضرایب $f(x)$ برای تبدیل به $f(\frac{x+2}{5})$ ابتدا $\frac{1}{5}$ به سمت چپ رفته و سپس دامنه f برابر شده.

$-2 - \frac{2}{5} = -\frac{12}{5}$, $4 - \frac{2}{5} = \frac{18}{5} \rightarrow -\frac{12}{5} \times \frac{5}{1} = (-12)$ $\frac{18}{5} \times \frac{5}{1} = 18 \rightarrow D_f = [-12, 18]$

(۲) دامنه $f(x)$ به $[-2, 4]$ است یعنی به جای x باید $x-2$ باشد $[-2, 4] \leftarrow [-2, 4]$

$-2 \leq x \leq 4 \rightarrow -6 \leq x-2 \leq 10 \rightarrow [-6, 10]$ دامنه $f(x)$ به $[-8, 12]$ است $D_{f(x)} = [-8, 12]$

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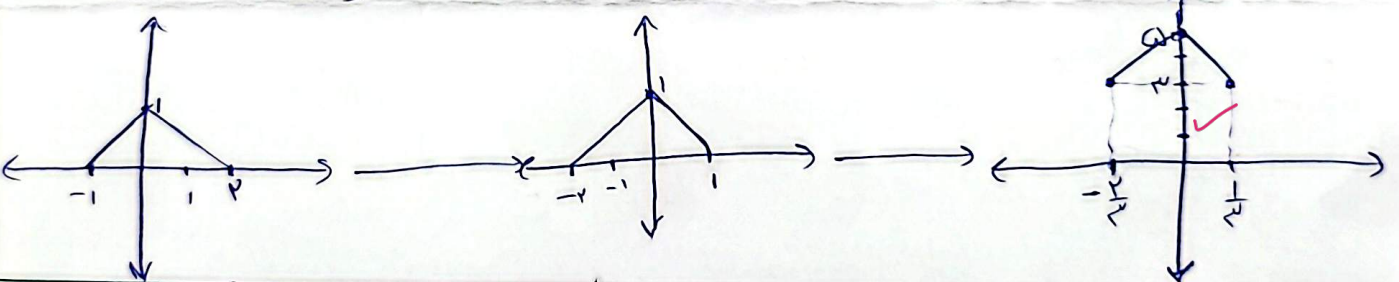
$-1 \leq x \leq 3 \rightarrow -10 \leq x \leq 9 \rightarrow -2 \leq x+1 \leq 10 \rightarrow -1 \leq \frac{x+1}{2} \leq 5 = D_{f(x)} = [-1, 5]$ (۳) (۲)

دامنه $f(2x)$ به $-1 \leq 2x \leq 5 \rightarrow -\frac{1}{2} \leq x \leq \frac{5}{2} \rightarrow D_{f(2x)} = [-\frac{1}{2}, \frac{5}{2}]$

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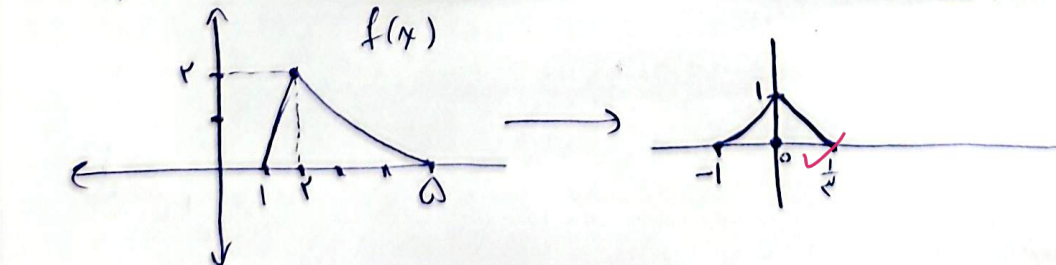
دامنه $f(x)$ به $[-1, 2]$ است $-1 \leq x+1 \leq 2 \rightarrow -2 \leq x \leq 1$ (۴) (۲)

$-2 \leq x \leq 1 \rightarrow -\frac{2}{2} \leq \frac{x}{2} \leq \frac{1}{2} \rightarrow -1 \leq \frac{x}{2} \leq \frac{1}{2}$



دامنه $f(x)$ به $[-1, 2]$ است $1 \leq 2x \leq 5 \rightarrow -1 \leq -x \leq 2 \rightarrow 1 \geq x \geq -2$ (۵) (۲)

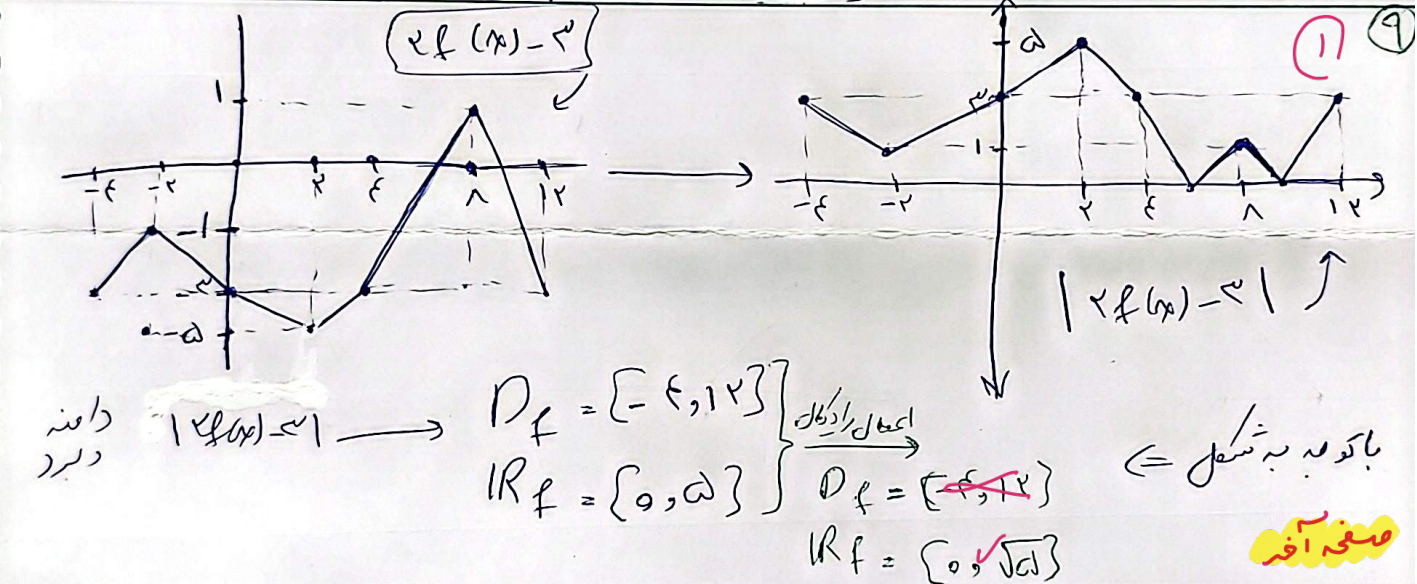
$1 \geq x \geq -2 \rightarrow 0 \leq \frac{1}{2}x \leq 1 \rightarrow D_{f(\frac{1}{2}x)} = [0, 1]$



$y = -\frac{1}{2}x^2 + \frac{1}{2}x + 1 \rightarrow \text{نقطه اوج} \Rightarrow \left(\frac{1}{2}, \frac{5}{4}\right) \Rightarrow \frac{1}{2}$
 وپاره $\Rightarrow \left(-\frac{1}{2}\Delta x\right) + 1 + \Delta x)^2 + \frac{1}{2}(x - y - \Delta y) \Rightarrow \frac{1}{2}(x - y - \frac{1}{2}) - \frac{1}{2}x \frac{1}{2} + 1 - \frac{1}{2}$
 $x - \frac{1}{2} = t \Rightarrow -\frac{1}{2}t^2 + 2t - 1 + 1 \Rightarrow \frac{1}{2}t^2 - 2t + 1 \Rightarrow \frac{1}{2}t^2 - 2t + 1 = 0 \Rightarrow t = 1 \Rightarrow x = \frac{1}{2}$
 $6 | x_1 - x_2 | = | 1 - 1 | \rightarrow \text{تابع هموار را با خط مماس قطع کنیم و به نقطه اوج برسیم}$

1) $f(x) \Rightarrow D_{f(x)} = [-1, 3] \rightarrow -1 \leq x+2 \leq 3 \rightarrow -1 \leq x \leq 1 \Rightarrow f(x+2)$
 $g \Rightarrow -2g+1 \rightarrow -\infty < g < \infty \rightarrow -\infty < -2g+1 < \infty$
 $x = -\frac{1}{2}, \beta = -1 \Rightarrow \boxed{x \cdot \beta = \frac{1}{2}}$

$D_f = (a, 4] \Rightarrow f(x-1) \rightarrow D_{f(x-1)} = (a+1, 4]$
 $D_g = [-1, b) \Rightarrow g(y+1) \rightarrow D_{g(y+1)} = [-2, b-1]$
 $a+1 = -2 \rightarrow \boxed{a = -3}$ $b-1 = 4 \rightarrow \boxed{b = 5}$ $a-b = -3-5 = -8$



$f(x) = \left| \frac{x+1}{x-1} \right| \rightarrow g(x) = \left| \frac{x-1}{x+1} \right| + 1$
 $x + \frac{|x-1|}{|x+1|} + 1 < 0 \rightarrow \text{کسر مثبت ناممکن است} \rightarrow \begin{cases} x-1 = 1-x \\ x-1 = x-1 \end{cases}$
 $(x+1)(1-x) + 1 - x < 0 \rightarrow -x^2 + 1 - x < 0 \rightarrow x^2 + x - 1 < 0 \rightarrow x < -\sqrt{2} \text{ or } x > \sqrt{2}$
 $\boxed{(-\infty, -\sqrt{2}) \cup (\sqrt{2}, \infty)}$

$$D_{y_1} = [-r, \Delta] \rightarrow -r \leq u \leq \Delta \rightarrow -\frac{1}{r} \leq \frac{u}{r} + 1 \leq \frac{\Delta}{r} \Rightarrow D_f = \left[-\frac{1}{r}, \frac{\Delta}{r}\right]$$

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$$R_{y_1} = [-1, r] \rightarrow -1 \leq f \leq r \rightarrow -\Delta \leq rf - r \leq 1 \rightarrow 0 \leq |rf - r| \leq \Delta$$

$$0 \leq \sqrt{|rf - r|} \leq \sqrt{\Delta} \Rightarrow R_f = [0, \sqrt{\Delta}]$$