

دامنه $f(x) = [-2, 4]$ دامنه $f(\frac{x+2}{5})$ $-2 \leq \frac{x+2}{5} \leq 4 \rightarrow -10 \leq x+2 \leq 20$ (1)

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

رابطه ۱: دامنه $f(x)$ برای تبدیل به $f(\frac{x+2}{5})$ ابتدا $\frac{1}{5}$ به سمت چپ رفته و سپس دامنه f برابر شده.

$-2 - \frac{1}{5} = -\frac{11}{5}$, $4 - \frac{1}{5} = \frac{19}{5} \rightarrow -\frac{11}{5} \times \frac{5}{1} = (-11)$ $\frac{19}{5} \times \frac{5}{1} = 19 \rightarrow D_f = [-11, 19]$

(2) دامنه $f(x)$ برابر $[-2, 4]$ است یعنی به جای x باید $x-2$ بماند $[-2, 4]$ قرار دهیم $\Rightarrow$

$-2 \leq x \leq 4 \rightarrow -4 \leq x-2 \leq 2 \rightarrow [-4, 2]$ پس دامنه $f(x)$ پس $[-8, 6]$ است $\Rightarrow [-8, 6]$

$D_{f(x)} = [-8, 6]$

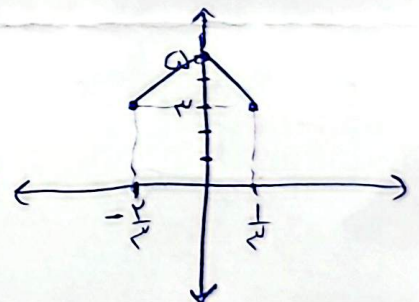
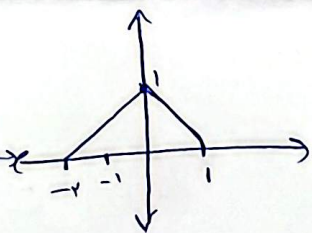
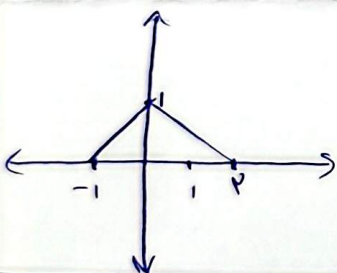
$-1 \leq x \leq 3 \rightarrow -1 \leq x+1 \leq 4 \rightarrow -2 \leq x+1 \leq 5 \rightarrow -1 \leq \frac{x+1}{2} \leq \frac{5}{2} = D_{f(x)} = [-1, \frac{5}{2}]$ (3)

دامنه $f(2x)$ $-1 \leq 2-5x \leq 5 \rightarrow -3 \leq -5x \leq 7 \rightarrow 3 \leq 5x \leq -7 \rightarrow \boxed{\frac{3}{5} \leq x \leq -\frac{7}{5}}$

$D_{f(2x)} = [-\frac{7}{5}, \frac{3}{5}]$

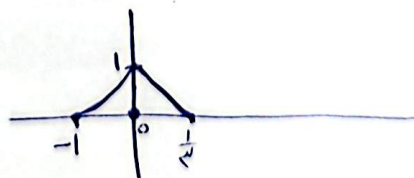
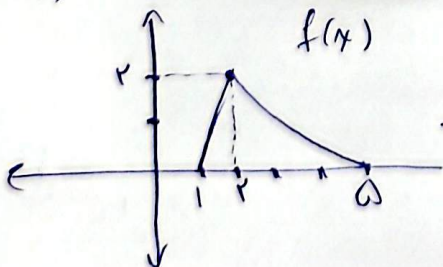
دامنه $f(x)$ $[-1, 2]$ $-1 \leq x+1 \leq 2 \rightarrow -2 \leq x \leq 1$ (4)

$\rightarrow -\frac{1}{2} \leq x \leq \frac{1}{2}$ بر $0 \leq y \leq 1 \rightarrow 3 \leq 2y+4 \leq 5$



دامنه $f(2x)$ $1 \leq 2-5x \leq 5 \rightarrow -1 \leq -5x \leq 4 \rightarrow 1 \geq x \geq -\frac{4}{5}$ (5)

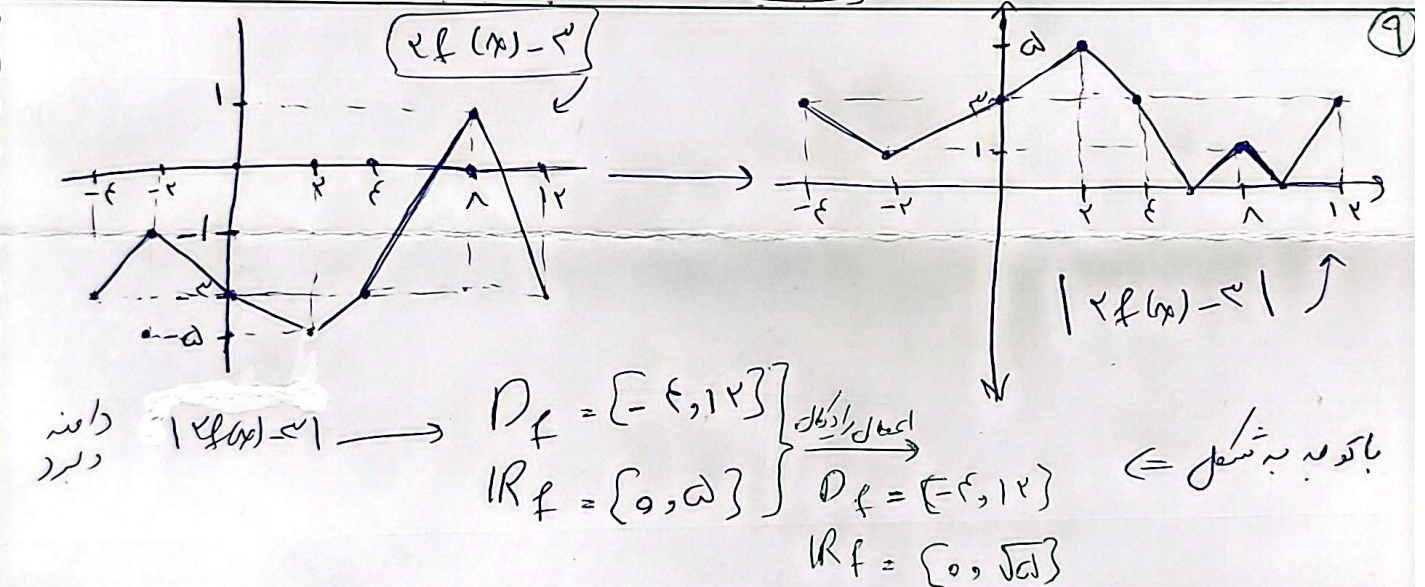
$D_{f(2x)} = [-1, \frac{1}{5}]$, بر $0 \leq y \leq 2 \rightarrow \boxed{0 \leq \frac{1}{2}y \leq 1} \rightarrow R_f = \{0, 1\}$



$y = -\frac{1}{\omega}x^2 + \frac{2}{\omega}x + 1 \rightarrow \left(\frac{2}{\omega}, \frac{1}{\omega}\right) \rightarrow \frac{4}{\omega}$
 ملاحظه $\Rightarrow \left(-\frac{1}{\omega}\Delta x\right) + 1 + \Delta x)^2 + \frac{2}{\omega}(x - y - \Delta y) \Rightarrow \frac{2}{\omega}(x - y - \frac{2}{\omega}) - \frac{1}{\omega}x^2 + 1 - \frac{1}{\omega})^2$
 $x - \frac{1}{\omega} = t \Rightarrow -\frac{2}{\omega}t^2 + 2\omega - 4\omega + 1 \rightarrow \frac{1}{\omega}x - \frac{2}{\omega} = t \rightarrow -\frac{1}{\omega}x + \frac{2}{\omega} = t$
 $\omega | x_1 - x_2 | = | 1 - 1 | \rightarrow$ تابع هموار را با ω

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

$D_f = (a, c) \Rightarrow f(x-1) \rightarrow D_{f(x-1)} = (a+1, c)$
 $D_g = [-1, b] \Rightarrow g(y+1) \rightarrow D_{g(y+1)} = [-2, b-1]$
 $a+1 = -2 \rightarrow \boxed{a = -3}$ $b-1 = c \rightarrow \boxed{b = c}$ $\boxed{a-b = -3-c = -9}$



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