

$$f(x) \rightarrow \text{دامنه} \rightarrow D_{f(x)} = [-2, 4]$$

$$\text{دامنه } f\left(\frac{x+2}{5}\right) \rightarrow -2 \leq \frac{x+2}{5} \leq 4 \rightarrow -10 \leq x+2 \leq 20$$

$$\rightarrow -12 \leq x \leq 18 \rightarrow -4 \leq x \leq 4 \rightarrow [-4, 4]$$

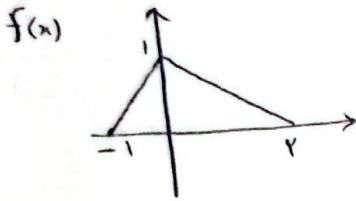
$$f(x-2) \rightarrow D = [-2, 4] \rightarrow f(x) \rightarrow D = [-4, 6]$$

$$-4 \leq x \leq 6 \rightarrow -2 \leq x-2 \leq 4 \rightarrow -4 \leq x-2 \leq 4$$

$$f\left(\frac{x+1}{2}\right) \rightarrow D = [-2, 4] \rightarrow f(x) \rightarrow D = [-4, 6]$$

$$-4 \leq x \leq 6 \rightarrow -2 \leq \frac{x+1}{2} \leq 4 \rightarrow -4 \leq x+1 \leq 8 \rightarrow -5 \leq x \leq 7$$

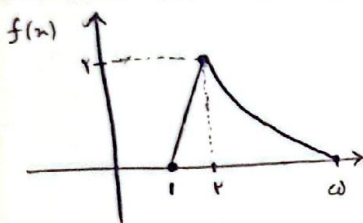
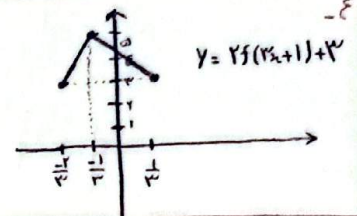
$$-4 \leq \frac{x+1}{2} \leq 4 \rightarrow -8 \leq x+1 \leq 8 \rightarrow -9 \leq x \leq 7 \rightarrow \frac{-9}{2} \leq x \leq \frac{7}{2}$$



$$\text{دامنه} \rightarrow -1 \leq x+1 \leq 2 \rightarrow -2 \leq x \leq 1 \rightarrow \frac{-2}{2} \leq x \leq \frac{1}{2}$$

$$y = 2f(x+1) + 3 \rightarrow [0, 7] \text{ کا دو برابر می شود}$$

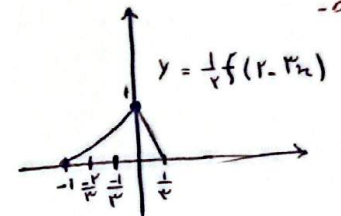
$$x+1=0 \rightarrow x = -1$$



$$\text{دامنه} \rightarrow 1 \leq x-1 \leq 4 \rightarrow 2 \leq x \leq 5 \rightarrow -3 \leq x \leq 1$$

$$\rightarrow -1 \leq x \leq \frac{1}{2} \quad \text{⑤ تیز می شود} \rightarrow x-1=2 \rightarrow x=3$$

$$\text{⑥ } R = [0, 1] \text{ می شود پس } \frac{1}{2} \text{ کا نصف}$$



$$y = \frac{1}{2}x^2 + \frac{1}{2}x + 1 \quad x_5 = \frac{-b}{2a} = \frac{-\frac{1}{2}}{1} = -\frac{1}{2}$$

$$y_5 = \frac{1}{2}\left(-\frac{1}{2}\right)^2 + \frac{1}{2}\left(-\frac{1}{2}\right) + 1 = \frac{1}{8} - \frac{1}{4} + 1 = \frac{7}{8}$$

$$y = \frac{1}{2}(x^2 - \frac{1}{2}x - 3) = \frac{1}{2}\left(x^2 - \frac{1}{2}x + \frac{1}{16} - \frac{1}{16} - 3\right) = \frac{1}{2}\left(x - \frac{1}{4}\right)^2 - \frac{49}{16}$$

$$\rightarrow y' = \frac{1}{2}(2x - \frac{1}{4}) = 0 \rightarrow x = \frac{1}{8}$$

$$\rightarrow y = \frac{1}{2}\left(\frac{1}{8}\right)^2 - \frac{49}{16} = \frac{1}{128} - \frac{49}{16} = -\frac{771}{128}$$

$$f(x) = y \quad (1, 4) \quad y = 1 - 2f(x+2) \rightarrow (\alpha, \beta)$$

$$\rightarrow x_5 = 1 \Rightarrow x+2=1 \Rightarrow x = -1$$

$$\rightarrow y_5 = 4 \Rightarrow -2(4) + 1 = -7 \Rightarrow y = -7$$

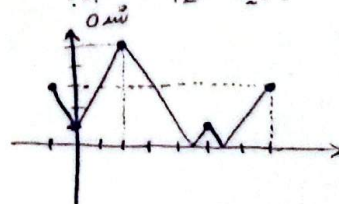
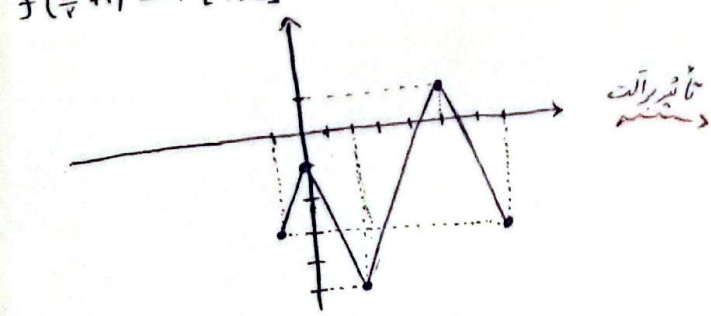
$$\alpha \beta = \left[\frac{y}{x}\right]$$

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

$$(a+1, 5] \cap [-2, b-1] \rightarrow (-2, 5) = (a+1, b-1) \Rightarrow a+1 = -2 \Rightarrow a = -3 \quad b-1 = 5 \Rightarrow b = 6$$

$$a-b = -3-6 = -9$$

$$f\left(\frac{x}{2}+1\right) \rightarrow [-2, 4] \rightarrow -2 \leq \frac{x}{2}+1 \leq 4 \rightarrow \frac{-4}{2} \leq \frac{x}{2} \leq \frac{6}{2}$$



$$R = [0, 5]$$

$$D = \left[\frac{1}{2}, \frac{5}{2}\right]$$

$$f(x) = \left| \frac{x+1}{x+1} \right| \rightsquigarrow \text{Cuvb } \frac{x+1}{x+1} \Rightarrow g(x) = \left| \frac{(x-1)+1}{1(x-1)+1} \right| + 1 = \left| \frac{x-1}{x-1} \right| + 1$$

$$\rightsquigarrow x+1 + \underbrace{\left| \frac{x-1}{x-1} \right|}_{[0, +\infty)} < 0 \rightsquigarrow \left| \frac{x-1}{x-1} \right| < -x-1 \Rightarrow \textcircled{1} -x-1 > 0 \Rightarrow x < -1$$

$$\textcircled{1} \frac{x-1}{x-1} < -x-1 \rightsquigarrow x-1 > (x-1)(x-1) \rightsquigarrow x-1 > -x^2 + 2x - 1$$

$$\rightsquigarrow x^2 > x \rightsquigarrow x > \sqrt{x}, \quad x < -\sqrt{x} *$$

$$* \boxed{(-\infty, -\sqrt{x})}$$