

$$D_{f(x)} = [-2, 4]$$

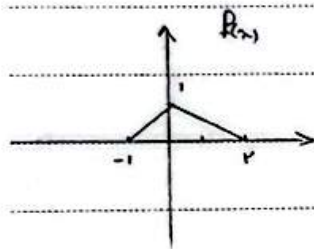
$$f\left(\frac{x+2}{2}\right) \Rightarrow D: -2 \leq \frac{x+2}{2} \leq 4 \Rightarrow -10 \leq x+2 \leq 8$$

$$\Rightarrow -12 \leq x \leq 16 \Rightarrow -4 \leq x \leq 4 \Rightarrow D = [-4, 4]$$

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

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

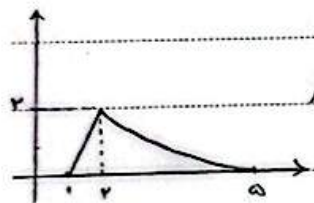
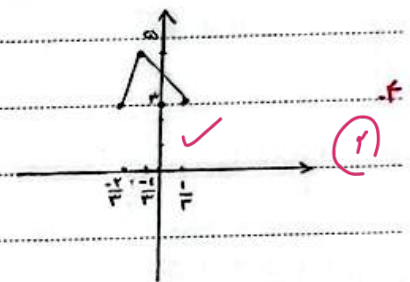
$$f(x-2) \rightarrow D: -1 \leq x-2 \leq 3 \Rightarrow -1 \leq -2 \leq 3 \Rightarrow \frac{-1}{2} \leq x \leq \frac{3}{2} \Rightarrow D = \left[-\frac{1}{2}, \frac{3}{2}\right]$$



نقطة: $f(-1)=0 \rightarrow x+1=-1 \Rightarrow x=-2$
 $y=f(-2)+3=3$

$f(0)=1 \rightarrow x+1=0 \Rightarrow x=-1$
 $y=f(-1)+3=3$

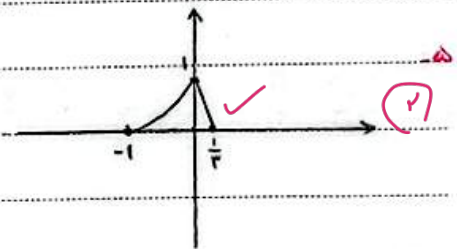
$f(2)=0 \rightarrow x+1=2 \Rightarrow x=1$
 $y=f(1)+3=3$



نقطة: $f(1)=0 \rightarrow x-1=1 \Rightarrow x=2$
 $y=f(2)=0$

$f(2)=1 \rightarrow x-1=2 \Rightarrow x=3$
 $y=f(3)=1$

$f(0)=0 \rightarrow x-1=0 \Rightarrow x=1$
 $y=f(1)=0$



$$y=a(x-h)^2+k \rightarrow y=\frac{1}{4}(x-1)^2+3 \Rightarrow (x-1)^2=4 \Rightarrow x-1=2 \Rightarrow x=3$$

$$x-1=-2 \Rightarrow x=-1$$

$$x+2=1 \Rightarrow x=-1 \Rightarrow x=-\frac{1}{2}$$

$$\Rightarrow \alpha\beta = \left(-\frac{1}{2}\right)(-1) = \frac{1}{2}$$

$$y=1-2f(x+2) \xrightarrow{x=-\frac{1}{2}} 1-2f(1) = 1-2(1) = -1 = \beta$$

$$Df = (a, f] \Rightarrow Df(x-1) : a < x-1 \leq f \Rightarrow a+1 < x \leq f+1 \Rightarrow D = (a+1, f+1] \quad (2) \quad -1$$

$$Dg = [-1, b) \Rightarrow Dg(x+1) : -1 \leq x+1 < b \Rightarrow -2 \leq x < b-1 \Rightarrow D = [-2, b-1)$$

$$y = f(x-1) + g(x+1) \Rightarrow D = Df(x-1) \cap Dg(x+1) = (a+1, f+1] \cap [-2, b-1) = (-2, f+1)$$

$$\Rightarrow a+1 = -2 \Rightarrow a = -3, \quad b-1 = f+1 \Rightarrow b = f+2 \Rightarrow a-b = -3-f-2 = -f-5$$

$$Dg = [-2, f+1] \Rightarrow -2 \leq x \leq f+1 \Rightarrow -\frac{1}{f} \leq \frac{x}{f} + 1 \leq \frac{f+1}{f} \Rightarrow Df = \left[-\frac{1}{f}, \frac{f+1}{f}\right] \quad (2) \quad -9$$

$$Rg = [-1, 2] \Rightarrow -1 \leq f \leq 2 \Rightarrow -\infty < 2f-3 \leq 1 \Rightarrow 0 \leq |2f-3| \leq \infty$$

$$0 \leq |2f-3| \leq \infty \Rightarrow Rf = [0, \infty)$$

$$f(n) = \left| \frac{n+1}{n-1} \right| \xrightarrow{u \rightarrow \infty} \left| \frac{n-1}{n-1} \right| \xrightarrow{u \rightarrow \infty} \left| \frac{n-1}{n-1} \right| + 1 = g(n) \rightarrow n+g(n) < 0 \quad (2) \quad -10$$

$$\Rightarrow n + \left| \frac{n-1}{n-1} \right| < 0 \Rightarrow n < -1 \quad (1)$$

$$\xrightarrow{(-\infty, -1)} \frac{n-1}{n-1} > 0 \Rightarrow n+1 + \frac{n-1}{n-1} < 0 \Rightarrow \frac{n^2-fn}{n-1} < 0 \rightarrow \text{حالات مختلفه من حيث الإشارة}$$

$$\Rightarrow \frac{-f \pm \sqrt{f^2-4}}{2} = (-\infty, -f) \cup (f, +\infty) \quad (2) \quad \Rightarrow (-\infty, -f) \quad \checkmark$$