

19, 8

برای سلفروشان (دارد هم بزرگ) - تلفنی

$$D_f: [-r, r] \quad f\left(\frac{r\alpha+r}{a}\right) \Rightarrow -r \leq \frac{r\alpha+r}{a} \leq r \Rightarrow -1 \leq r\alpha+r \leq r \Rightarrow -1 \leq r\alpha \leq 1 \Rightarrow -r \leq \alpha \leq r$$

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$$\Rightarrow D_{f\left(\frac{r\alpha+r}{a}\right)}: [-r, r]$$

$$D_{f(r\alpha-r)}: [-r, r] \Rightarrow -r \leq \alpha \leq r \Rightarrow -r \leq r\alpha \leq r \Rightarrow -r \leq r\alpha-r \leq r$$

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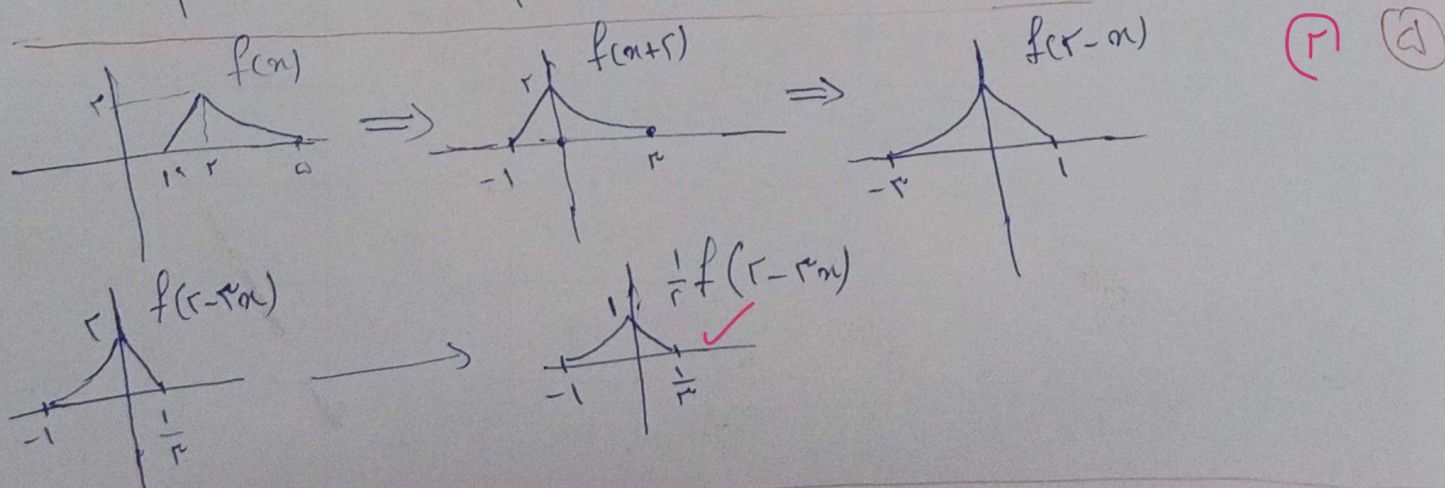
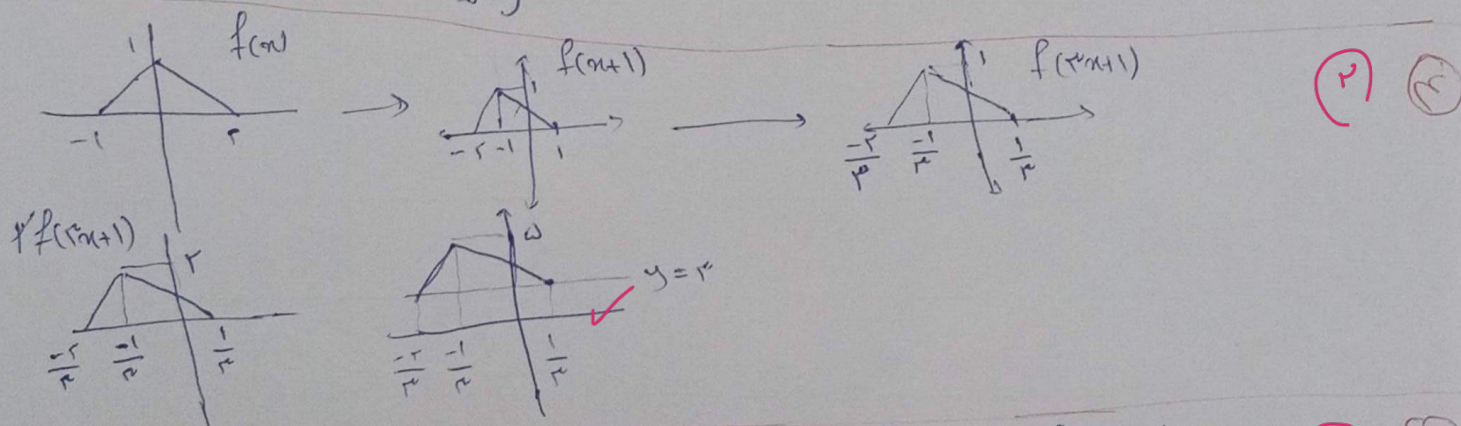
$$\Rightarrow D_{f(\alpha)}: [-r, r]$$

$$D_{f\left(\frac{r\alpha+1}{c}\right)}: [-1, r] \Rightarrow -1 \leq \alpha \leq r \Rightarrow -r \leq r\alpha \leq r \Rightarrow -r \leq r\alpha+1 \leq r \Rightarrow -r-1 \leq r\alpha \leq r-1 \Rightarrow \frac{-r-1}{r} \leq \alpha \leq \frac{r-1}{r}$$

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$$D_{f(\alpha)}: \left(-\frac{r}{a}, \frac{r}{a}\right) \Rightarrow -r \leq r-\alpha \leq r \Rightarrow -r \leq -\alpha \leq r \Rightarrow -\frac{r}{a} \leq \alpha \leq \frac{r}{a}$$

$$\Rightarrow D_{f(r-\alpha)}: \left(-\frac{r}{a}, \frac{r}{a}\right)$$



$$f(\alpha) = \frac{1}{r}\alpha + \frac{c}{a}\alpha + 1 \rightarrow a = \frac{1}{r} \quad y = a(x-h) + k \rightarrow \frac{1}{r}(\alpha-r) + r = 0 \rightarrow \frac{1}{r}(\alpha-r) = -r \Rightarrow (\alpha-r) = -a \rightarrow \alpha-r = \pm r \Rightarrow \begin{cases} \alpha_1 = +r \\ \alpha_2 = -r \end{cases}$$

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$$f(1) = e \quad y = 1 - \sqrt{f(x+2)} \quad A, (\alpha, \beta) \rightarrow f(x) = f(1) \Rightarrow \sqrt{x+2} = 1 \Rightarrow x+2 = 1 \Rightarrow x = -1$$

$$\beta = 1 - \sqrt{f(1)} \rightarrow \beta = 1 - 1 = 0 \Rightarrow \alpha\beta = (-1)(0) = 0$$

$$Df = (a, c] \xrightarrow{f(x-1)} a < x-1 \leq c \rightarrow a+1 < x \leq c+1 \rightarrow Df_{(x+1)} = (a+1, c+1]$$

$$Dg = [-1, b) \xrightarrow{g(x+1)} -1 \leq x+1 < b \rightarrow -2 \leq x < b-1 \rightarrow Dg_{(x+1)} = [-2, b-1)$$

$$y = f(x-1) + g(x+1) \quad D_y = Df_{(x+1)} \cap Dg_{(x+1)} = (-2, c+1]$$

$$\Rightarrow a+1 = -2 \Rightarrow a = -3 \quad b-1 = c+1 \Rightarrow b = c+2$$

$$Df_{(\frac{x}{c}+1)} = [-2, c] \rightarrow -2 \leq x \leq c \rightarrow \frac{-2}{c} \leq \frac{x}{c} \leq 1 \rightarrow \frac{-1}{c} \leq \frac{x}{c} + 1 \leq \frac{c+1}{c}$$

$$\rightarrow Df(x) = [-\frac{1}{c}, \frac{c+1}{c}] \quad R_{f(\frac{x}{c}+1)} = R_{f(x)} = [-1, 2]$$

$$-1 \leq f(x) \leq 2 \rightarrow -2 \leq \sqrt{f(x)} \leq \sqrt{2} \rightarrow -2 \leq \sqrt{f(x)} - 1 \leq 1 \Rightarrow 1 \leq \sqrt{f(x)} - 1 + 1 \leq 2$$

$$\rightarrow 1 \leq \sqrt{f(x)} \leq 2 \rightarrow R: [1, 2]$$

صفحه آخر

$$f(x) = \left| \frac{x+1}{x+1} \right| \rightarrow f(x-2) = \left| \frac{(x-2)+1}{x(x-2)+1} \right| = \left| \frac{x-1}{x^2-2x+1} \right| \rightarrow f(x-2)+1 = \left| \frac{x-1}{x^2-2x+1} \right| + 1 = g(x)$$

$$x + g(x) < 0 \quad g(x) = \left| \frac{x-1}{x^2-2x+1} \right| + 1 \Rightarrow x < -1 \quad \begin{cases} x-1 < 0 \\ x^2-2x+1 < 0 \end{cases}$$

$$\left| \frac{x-1}{x^2-2x+1} \right| = \frac{x-1}{x^2-2x+1} = -\frac{(1-x)}{-(x^2-2x+1)} = \frac{1-x}{x^2-2x+1} \rightarrow \frac{1-x}{x^2-2x+1} + 1 + x < 0$$

$$\Rightarrow 1-x + (1+x)(x^2-2x+1) < 0 \rightarrow -2x^2 + x + 2 + 1 - x < 0 \rightarrow -2x^2 + 2 < 0$$

$$\rightarrow 2x^2 > 2 \rightarrow x^2 > 1 \quad \begin{cases} x > 1 \\ x < -1 \end{cases} \quad \begin{matrix} \text{نمایی داریم} \\ \text{نمایی داریم} \end{matrix} \rightarrow (-\infty, -1) \cup (1, \infty)$$

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

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

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