

$$D_{f(x)} = [-2, 4] \rightarrow -2 \leq \frac{x+2}{5} \leq 4 \rightarrow \boxed{-8 \leq x \leq 18}$$

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

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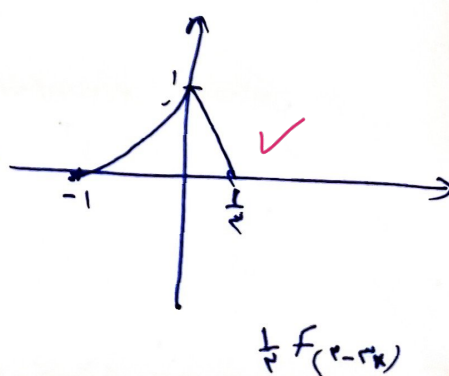
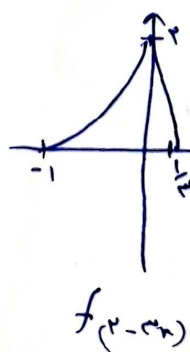
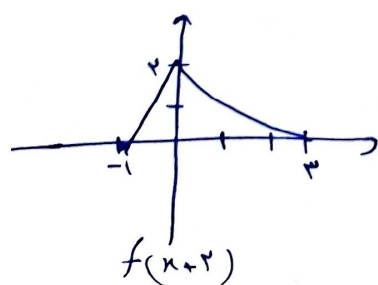
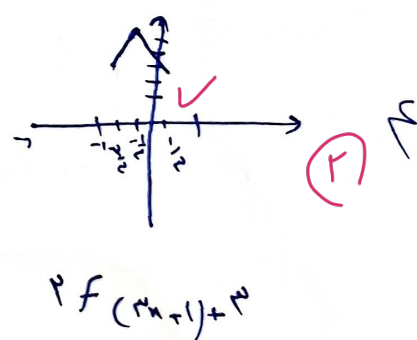
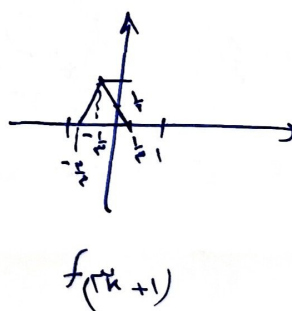
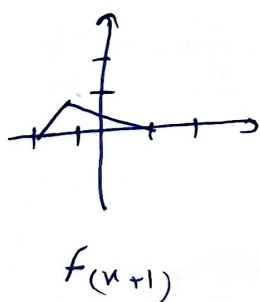
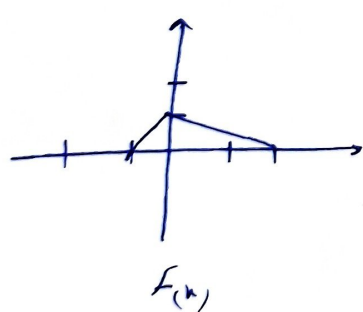
$$-2 \leq x \leq 3 \rightarrow -1 \leq x-2 \leq 5$$

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

$$-1 \leq x < 3, -1 \leq \frac{x+1}{2} < 5$$

$$\rightarrow -1 \leq 2x < 10 \rightarrow -3 \leq x < 5$$

$$\rightarrow D_{f(2-x)} = \boxed{\left(-\frac{3}{2}, \frac{3}{2}\right]}$$



$$y = -\frac{1}{2}x^2 + \frac{1}{2}x + 1 \quad \begin{matrix} -\frac{b}{2a} = \frac{1}{2} \\ -\frac{c}{a} = \frac{1}{2} \end{matrix} \quad \text{et} \quad \frac{213}{212}$$

$$\rightarrow y = a(x-b)^2 + c \rightarrow \text{et} \begin{matrix} a = -\frac{1}{2} \\ b = \frac{1}{2} \\ c = \frac{1}{2} \end{matrix} \rightarrow g_n = -\frac{1}{2}(n-\frac{1}{2})^2 + \frac{1}{2}$$

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$$\rightarrow x = \boxed{\frac{1}{2}}$$

$$y = 1 - 2f(n+1) \rightarrow \begin{cases} r_{n+1} = 1 \rightarrow x_s = -\frac{1}{2} \\ 1 - 2f_1 = -1 \rightarrow y_s = -1 \end{cases}$$

$$\alpha = -\frac{1}{2} \quad \beta = -1 \rightarrow \alpha\beta = \frac{1}{2}$$

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$$f_n = -(n+1)(n-1) \rightarrow 1 - 2f_{n+1} = 2(r_{n+1})(r_{n+1}-1) + 1 \\ = 1 + 2r_{n+1} + 2r_n - 2 \quad \text{et} \quad -\frac{1}{2}$$

$$D_{f_n} = (a, c] \quad D_{f_{(n-1)}} = (a+1, c]$$

$$D_{g_n} = [-1, b) \rightarrow D_{g_{(n+1)}} = [-2, b-1) \rightarrow (-2, a) \rightarrow \begin{matrix} a = -\frac{1}{2} \\ b = -1 \end{matrix}$$

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$$a - b = \boxed{-\frac{1}{2}}$$

$$-1 \leq n \leq 2 \rightarrow -\frac{1}{2} \leq \frac{n}{2} + 1 \leq \frac{1}{2} \quad D_{g_n} = D_{f_n} = [-1, \frac{1}{2}]$$

$$D_{f_n} = [-1, 2] \quad -1 \leq f_n \leq 2 \rightarrow -2 \leq 2f_n - 1 \leq 1$$

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$$0 \leq |2f_n - 1| \leq 2 \rightarrow \sqrt{2f_n - 1} \leq \sqrt{2} \rightarrow R_{g_n} = [0, \sqrt{2}]$$

$$f_n = \left| \frac{n+1}{n-1} \right| \rightarrow g_n = \left| \frac{n-1}{n-2} \right| + 1 \quad n + \left| \frac{n-1}{n-2} \right| + 1 < 0 \rightarrow n + \frac{n-1}{n-2} < -1 - n$$

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$$\begin{aligned} \frac{n-1}{n-2} + 1 + n < 0 &\rightarrow \frac{n^2 - 1}{n-2} < 0 \rightarrow (-\infty, -\sqrt{2}) \cup (\sqrt{2}, \frac{1}{2}) \\ \frac{n-1}{n-2} - n - 1 > 0 &\rightarrow \frac{-n^2 + n + 1}{n-2} > 0 \rightarrow (-\infty, \frac{1-\sqrt{5}}{2}) \cup (\frac{1}{2}, \frac{1+\sqrt{5}}{2}) \end{aligned} \rightarrow \boxed{(-\infty, -\sqrt{2})}$$