

۱) $D_{f(n)} [-2, 4] \rightarrow x \leq \frac{x_{n+1} + x}{2} \leq 4 \rightarrow -1 \leq x_{n+1} \leq 5 \rightarrow -1 \leq x_n \leq 4$
 $-1 \leq x \leq 4 \rightarrow D_{f(n)} [-1, 4]$

۲) $f(x_{n+1}) \rightarrow D_{f(n)} [-1, 3]$

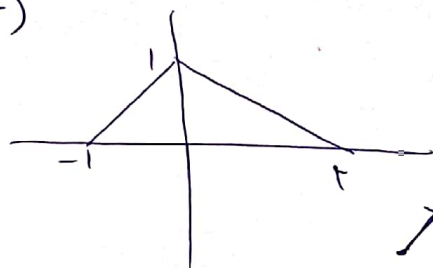
$(-1 \leq x_{n+1} \leq 3, -1 \leq x_{n+1} \leq 3) \rightarrow D_{f(n)} [-1, 3]$
 $x_{n+1} \leq 3, x_{n+1} \leq 3$

۳) $f(x_{n+1}) \rightarrow D_{f(n)} [-1, 3]$

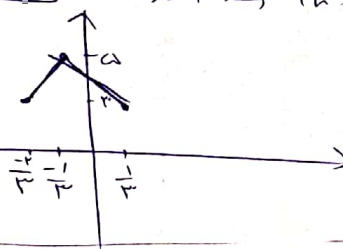
$\frac{x(-1)+1}{2} \leq \frac{x}{2} \leq -1$

$\frac{x(3)+1}{2} \leq \frac{x}{2} \leq 3 \rightarrow D_{f(n)} [-1, 3] \rightarrow -1 \leq x_{n+1} \leq 3 \rightarrow -1 \leq x_n \leq 3 \rightarrow D_{f(n)} [-1, 3]$

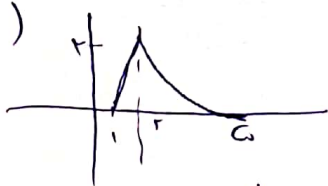
۴)



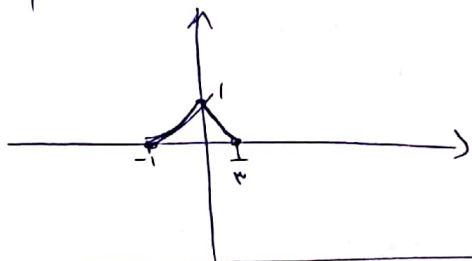
$f(-1)=0 \rightarrow x_{n+1} \leq -1 \rightarrow x_n \leq -1 \rightarrow y = \frac{1}{2}x_{n+1} + \frac{1}{2}x_n$
 $f(2)=0 \rightarrow x_{n+1} \geq 2 \rightarrow x_n \geq 2 \rightarrow y = \frac{1}{2}x_{n+1} + \frac{1}{2}x_n$
 $f(0)=1 \rightarrow x_{n+1} \leq 0 \rightarrow x_n \leq 0 \rightarrow y = \frac{1}{2}x_{n+1} + \frac{1}{2}x_n$



۵)



$f(0)=0 \rightarrow x_{n+1} \leq 0 \rightarrow x_n \leq 0 \rightarrow y = \frac{1}{2}x_{n+1} + \frac{1}{2}x_n$
 $f(2)=0 \rightarrow x_{n+1} \geq 2 \rightarrow x_n \geq 2 \rightarrow y = \frac{1}{2}x_{n+1} + \frac{1}{2}x_n$
 $f(1)=1 \rightarrow x_{n+1} \leq 1 \rightarrow x_n \leq 1 \rightarrow y = \frac{1}{2}x_{n+1} + \frac{1}{2}x_n$



۶) $y = \frac{1}{2}x^2 + \frac{1}{2}x + 1 \rightarrow \frac{1}{2}x^2 + \frac{1}{2}x + 1 \rightarrow y = \frac{1}{2}(x - \frac{1}{2})^2 + \frac{9}{8}$

بعد از انتقال $y = \frac{1}{2}(x - \frac{1}{2})^2 + \frac{9}{8} \rightarrow \frac{1}{2}(x - \frac{1}{2})^2 + \frac{9}{8} \rightarrow \frac{1}{2}(x - \frac{1}{2})^2 + \frac{9}{8} \rightarrow \frac{1}{2}(x - \frac{1}{2})^2 + \frac{9}{8}$
 $x - \frac{1}{2} \leq 3 \rightarrow x \leq \frac{7}{2}$
 $x - \frac{1}{2} \geq -5 \rightarrow x \geq -\frac{9}{2}$

$$v) a, b \rightarrow C, K) \rightarrow |x_n + y_n| \rightarrow n \rightarrow \frac{1}{n} = \alpha \quad \alpha \times \beta_n \left(\frac{-1}{n} \right) (-1)^n \frac{1}{n}$$

$$\rightarrow |1 - \frac{1}{n}|, y_n |1 - \frac{1}{n}|, |1 - \frac{1}{n}| - \frac{1}{n} \beta$$

$$1) D_f = (a, K) \quad f(n-1) \rightarrow r \geq n-1 \rightarrow a \geq n > a-1 \quad \left. \begin{array}{l} D_g = [-1, b] \rightarrow g(n+1) \rightarrow b > n+1 > -1 \rightarrow b-1 > n \geq -1 \end{array} \right\} \rightarrow (r, a)$$

$$a+1, -1 \rightarrow a > -1 \quad a-b, -1-1, -1$$

$$b-1, a \rightarrow b > a$$

$$9) g(n), y_n \sim \sqrt{|f(n) - \frac{1}{n}|} \sim |f(n) - \frac{1}{n}| > 0 \rightarrow \sigma_{g, y_n} \text{ دوال}$$

$$y_n = f\left(\frac{1}{n}\right) \rightarrow \left[-\frac{1}{n}, \frac{1}{n}\right] \xrightarrow{\frac{1}{n} \rightarrow 0} D_f \left[-\frac{1}{n}, \frac{1}{n}\right] \subseteq D_g$$

$$10) f(n) = \left| \frac{n-1}{n+1} \right| \rightarrow f(n-1) = \left| \frac{n-2}{n-1} \right| \rightarrow \left| \frac{n-1}{n-2} \right| + 1$$

$$a + \left| \frac{n-1}{n-2} \right| + 1 < 0$$

$\frac{a + \frac{1-n}{n-2} + 1 < 0}{\frac{n^2 - 2n^2 + 1 - n + 2 - n}{n-2} < 0}$ $\frac{-n^2 + 1}{n-2} < 0$ $\frac{-n^2 + 1}{-n} < 0 \rightarrow \frac{n^2 - 1}{n} > 0$ $\frac{(n-1)(n+1)}{n} > 0$ $n > 1 \text{ or } n < -1$	$\frac{a + \frac{n-1}{n-2} + 1 < 0}{\frac{n^2 - 2n^2 + n - 1 + 2 - n}{n-2} < 0}$ $\frac{-n^2 + n + 1}{n-2} < 0$ $\frac{-n^2 + n + 1}{-n} < 0 \rightarrow \frac{n^2 - n - 1}{n} > 0$ $\frac{n^2 - n - 1}{n} > 0$ $n > \frac{1+\sqrt{5}}{2} \text{ or } n < \frac{1-\sqrt{5}}{2}$	$\frac{a + \frac{n-1}{n-2} + 1 < 0}{\frac{n^2 - 2n^2 + n - 1 + 2 - n}{n-2} < 0}$ $\frac{-n^2 + n - 1}{n-2} < 0$ $\frac{-n^2 + n - 1}{-n} < 0 \rightarrow \frac{n^2 - n + 1}{n} > 0$ $\frac{n^2 - n + 1}{n} > 0$ $n > 0 \text{ or } n < 0$
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