

$$-2 \leq \frac{x_{n+2}}{a} \leq 4 \Rightarrow -10 \leq x_{n+2} \leq 40 \Rightarrow -12 \leq x_n \leq 18 \Rightarrow -4 \leq n \leq 6$$

$$\Rightarrow D = [-4, 6]$$

1

$$-2 \leq n \leq 2 \Rightarrow -6 \leq x_n \leq 6 \Rightarrow -8 \leq x_{n-2} \leq 8 \Rightarrow D_{f(n)} = [-8, 8]$$

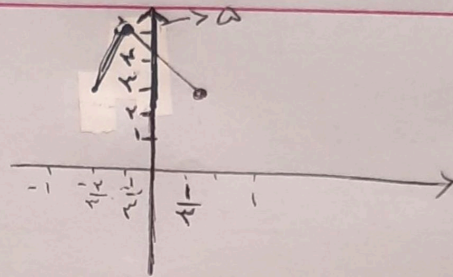
2

$$[-1, 3] \rightsquigarrow -1 \leq n \leq 3 \Rightarrow -2 \leq x_n \leq 6 \Rightarrow -2 \leq x_{n+1} \leq 10 \Rightarrow -1 \leq \frac{x_{n+1}}{2} \leq 5$$

$$\Rightarrow -1 \leq 2 - 2n \leq 5 \Rightarrow -2 \leq -2n \leq 3 \Rightarrow -\frac{2}{a} \leq n \leq \frac{3}{a} \Rightarrow D = \left[-\frac{2}{a}, \frac{3}{a}\right]$$

3

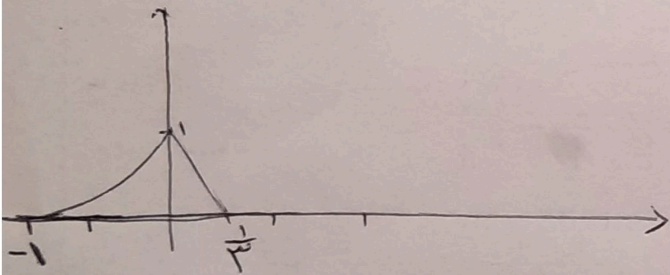
$$-1 \leq x_{n+1} \leq 2 \Rightarrow -\frac{2}{2} \leq n \leq \frac{1}{2}$$



4

$$1 \leq 2 - x_n \leq 5 \Rightarrow -1 \leq -x_n \leq 3 \Rightarrow -3 \leq x_n \leq 1 \Rightarrow -1 \leq n \leq \frac{1}{2}$$

5



$$\rightarrow a(n-2)^2 + 2 \rightarrow -\frac{1}{2}(n-2)^2 + 2 = -\frac{1}{2}n^2 + \frac{1}{2}n - \frac{1}{2} + 2 = -\frac{1}{2}n^2 + \frac{1}{2}n + \frac{3}{2}$$

$$\rightarrow -\frac{1}{2}n^2 + \frac{1}{2}n - \frac{1}{2} = 0 \Rightarrow n^2 - n + 1 = 0 \Rightarrow n = 1 \text{ or } n = 2$$

6

$$\left. \begin{aligned} x_{n+2} = 1 &\Rightarrow n = -\frac{1}{2} \Rightarrow a = -\frac{1}{2} \\ &\Rightarrow y = -2 \Rightarrow B = -2 \end{aligned} \right\} \Rightarrow ab = \frac{1}{2}$$

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$$\begin{aligned} -1 \leq n+1 \leq b &\Rightarrow -2 \leq n \leq b-1 \quad \text{I} \\ a \leq n-1 \leq 2 &\Rightarrow a+1 \leq n \leq 3 \quad \text{II} \end{aligned} \rightarrow \left. \begin{aligned} \text{I} \cap \text{II} \quad b-1 = 3 &\Rightarrow b = 4 \\ a+1 = -2 &\Rightarrow a = -3 \end{aligned} \right\} a-b = -3-4 = -7$$

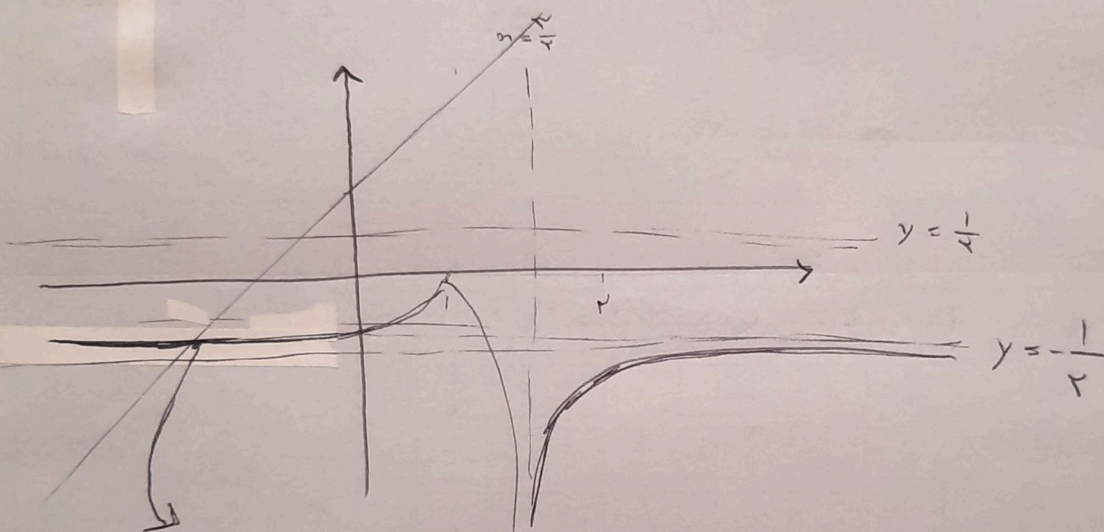
8

الف) $\leadsto -2 \leq n \leq 2 \Rightarrow -\frac{1}{2} \leq \frac{n}{2} + 1 \leq \frac{1}{2} \Rightarrow D = \left[-\frac{1}{2}, \frac{1}{2}\right]$

ب) $\leadsto -5 \leq f(n) \leq 2 \Rightarrow -2 \leq 2f(n) - 3 \leq 1 \Rightarrow 0 \leq |2f(n) - 3| \leq 2$
 $\Rightarrow 0 \leq \sqrt{|2f(n) - 3|} \leq \sqrt{2} \Rightarrow R = [0, \sqrt{2}]$

$g(n) = \left| \frac{n-1}{2n-3} \right| + 1 \Rightarrow$ $\begin{cases} n + \left| \frac{n-1}{2n-3} \right| + 1 < 0 \\ n + \left| \frac{n-1}{2n-3} \right| + 1 > 0 \end{cases}$

$\Rightarrow n+1 < -\left| \frac{n-1}{2n-3} \right|$



$n+1 = \frac{1-n}{2n-3} \Rightarrow 2n^2 - n - 3 = 1-n \Rightarrow 2n^2 = 2 \Rightarrow n = \pm \sqrt{1}$

$\Rightarrow n \in (-\infty, 1 - \sqrt{2})$