

م : $D_f = [-2, 4]$

$\rightarrow f\left(\frac{r_n+2}{5}\right) \rightarrow -2 \leq \frac{r_n+2}{5} \leq 4 \xrightarrow{\times 5} -10 \leq r_n+2 \leq 20$
 $-12 \leq r_n \leq 18$

$-2 \leq r \leq 4 \rightarrow D_{f'}: [-4, 4]$

$f(r_n-2) \xrightarrow{D_f:} -2 \leq r \leq 2 \rightarrow -4 \leq r_n \leq 4$

$-8 \leq r_n-2 \leq 2 \rightarrow \text{م : } [-1, 7] = D_{f(n)}$

$D_{f\left(\frac{r_n+1}{2}\right)} = [-1, 5] \rightarrow -1 \leq r \leq 5 \rightarrow -2 \leq r_n \leq 8$

$-2 \leq r_n+1 \leq 10$

$-1 \leq \frac{r_n+1}{2} \leq 5 \rightarrow D_{f(n)}: [-1, 5]$

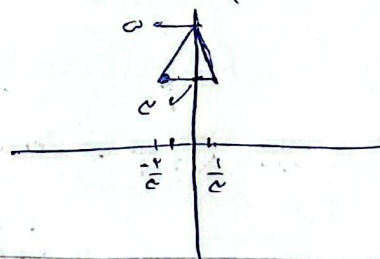
$D_{f(r-5n)}: -1 \leq r-5n \leq 5$

$-5 < 5n-2 \leq 1 \rightarrow -3 < 5n \leq 3 \rightarrow -\frac{3}{5} < n \leq \frac{3}{5} \rightarrow D_{f(r-5n)}: \left(-\frac{3}{5}, \frac{3}{5}\right]$

$D_{f(n)} = [-1, 2] \rightarrow D_{f(r_{n+1})}: -1 \leq r_{n+1} \leq 2$

$-2 \leq r_n \leq 1 \rightarrow -\frac{1}{2} \leq n \leq \frac{1}{2}$

$R_{f(n)} = [0, 1] \rightarrow R_{2f+3} = 2 \times [0, 1] + 3 = [3, 5]$



$D_{f(n)}: [1, 5] \rightarrow D_{f(r-r_n)}: 1 \leq r-r_n \leq 5$

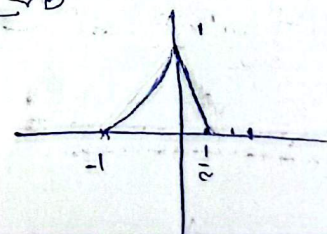
$-5 \leq r_n-2 \leq -1$

$-3 \leq r_n \leq 1 \rightarrow$

$-1 \leq n \leq \frac{1}{5}$

$R_{f(n)}: [0, 2] \rightarrow R_{\frac{1}{2}f}: [0, 1]$

چون فوار (آیس) ضرب شد، فوار نسبت به محمول (آیس) شود



$$y = \frac{-1}{2}x^2 + \frac{r}{2}x + 1 \rightarrow \text{سج: } \begin{cases} -\frac{b}{2a} \rightarrow \frac{-\frac{r}{2}}{2 \cdot (-\frac{1}{2})} = \frac{r}{2} \\ \frac{c}{2a} \rightarrow \frac{1}{2 \cdot (-\frac{1}{2})} = -1 \end{cases}$$

$$f\left(\frac{r}{2}\right) = \frac{-1}{2}\left(\frac{r}{2}\right)^2 + \frac{r}{2}\left(\frac{r}{2}\right) + 1 = -\frac{r^2}{8} + \frac{r^2}{4} + 1 = \frac{r^2}{4} + 1$$

$$\rightarrow \frac{-1}{2}x^2 - \frac{r^2}{4} + \frac{r^2}{4} + \frac{r}{2}x + 1 - \frac{r^2}{4} + \frac{r^2}{4} = \frac{-1}{2}x^2 + \frac{r}{2}x - \frac{r^2}{4} + 1 = \frac{-1}{2}x^2 + \frac{r}{2}x - \frac{r^2}{4} + 1$$

$$= \frac{-1}{2}x^2 + \frac{r}{2}x - \frac{r^2}{4} + 1 = \frac{-1}{2}x^2 + \frac{r}{2}x - \frac{r^2}{4} + 1 = \frac{-1}{2}x^2 + \frac{r}{2}x - \frac{r^2}{4} + 1$$

$$= \frac{-1}{2}x^2 + \frac{r}{2}x - \frac{r^2}{4} + 1 = \frac{-1}{2}x^2 + \frac{r}{2}x - \frac{r^2}{4} + 1 = \frac{-1}{2}x^2 + \frac{r}{2}x - \frac{r^2}{4} + 1$$

$$f(x) = \left(\frac{r}{2}\right)$$

$$g = 1 - r f(x) \rightarrow \text{سج: } \begin{cases} x_1 + r_2 = 1 \\ x_1 = -1 \\ x_2 = \frac{1}{r} \end{cases} \quad 1 - r f(x) = -v \rightarrow \text{سج: } \begin{cases} -\frac{1}{v} = (\alpha, \beta) \\ \alpha = -\frac{1}{v} \\ \beta = -v \end{cases}$$

$$\alpha\beta = \frac{v}{c}$$

$$D_f: (a, c] \quad y = f(x-1) + g(x+1) \quad D: (-r, d)$$

$$D_g: [-1, b)$$

$$D: a < x-1 \leq c \quad D: -1 \leq x+1 < b$$

$$a+1 < x \leq c+1 \quad -2 \leq x < b-1$$

$$\rightarrow a+1 > -2 \rightarrow a > -3$$

$$b-1 > c+1 \rightarrow b > c+2$$

$$a-b = -9$$

$$x \in [-r, d] \rightarrow D_f\left(\frac{x}{r} + 1\right) \rightarrow -r \leq x \leq d$$

$$-\frac{r}{r} \leq \frac{x}{r} \leq \frac{d}{r} \rightarrow -1 \leq \frac{x}{r} + 1 \leq \frac{d}{r} + 1 \rightarrow D_{f(x)} = \left[-\frac{1}{r}, \frac{d}{r} + 1\right]$$

$$R_f = [-1, r]$$

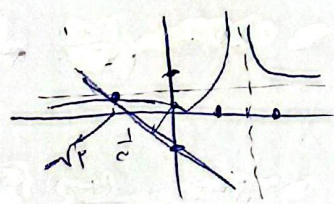
$$y_r = \sqrt{|rf(x) - c|} \rightarrow -1 \leq f \leq r$$

$$-r \leq rf \leq r \rightarrow -d \leq rf - c \leq 1 \rightarrow 0 \leq |rf - c| \leq d$$

$$\leq \sqrt{|rf - c|} \leq \sqrt{d} \rightarrow R: [0, \sqrt{d}]$$

$$f(x) = \left| \frac{x+1}{x-1} \right| \xrightarrow{\text{مربع}} \left| \frac{x-1+1}{x-1} \right| = \left| \frac{x-1}{x-1} \right| \xrightarrow{\text{مربع}} \left| \frac{x-1}{x-1} \right| + 1 > g(x)$$

$$\rightarrow x + \left| \frac{x-1}{x-1} \right| + 1 < \cdot \rightarrow \left| \frac{x-1}{x-1} \right| < -x-1$$



$$\frac{x-1}{x-1} = -x-1 \rightarrow x-1 = -x^2 - x + 1$$

$$x^2 + 2x - 2 = 0$$

$$x = -1 \pm \sqrt{3}$$

$$\rightarrow \text{در بازه } (-\infty, -\sqrt{3}) \text{ و } (\sqrt{3}, \infty)$$