

$$D_{f(n)} = [-2, 4] \rightarrow D_{f\left(\frac{n+2}{8}\right)} = [-2, 4]$$

$$-2 \leq \frac{n+2}{8} \leq 4 \rightarrow -12 \leq n \leq 18 \rightarrow -4 \leq n \leq 4$$

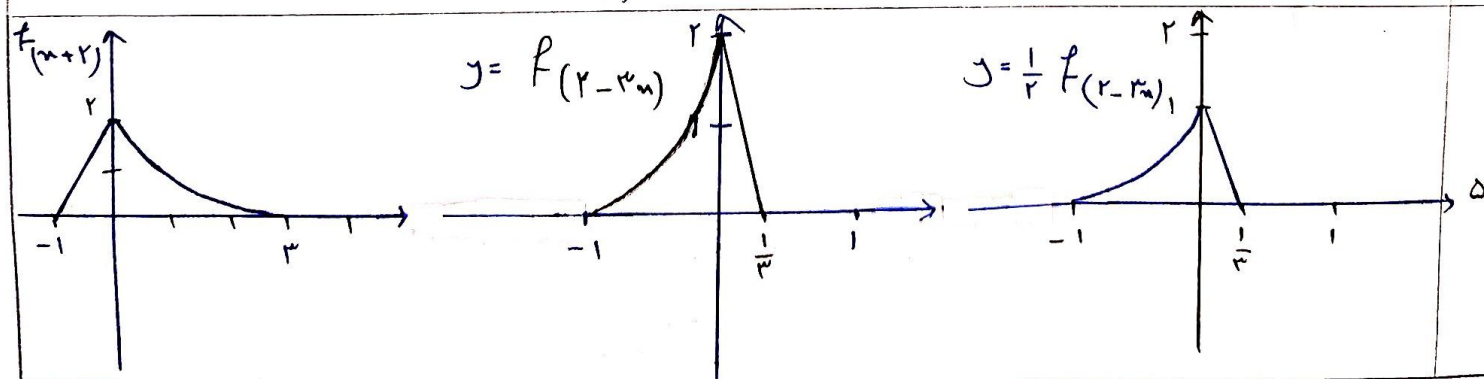
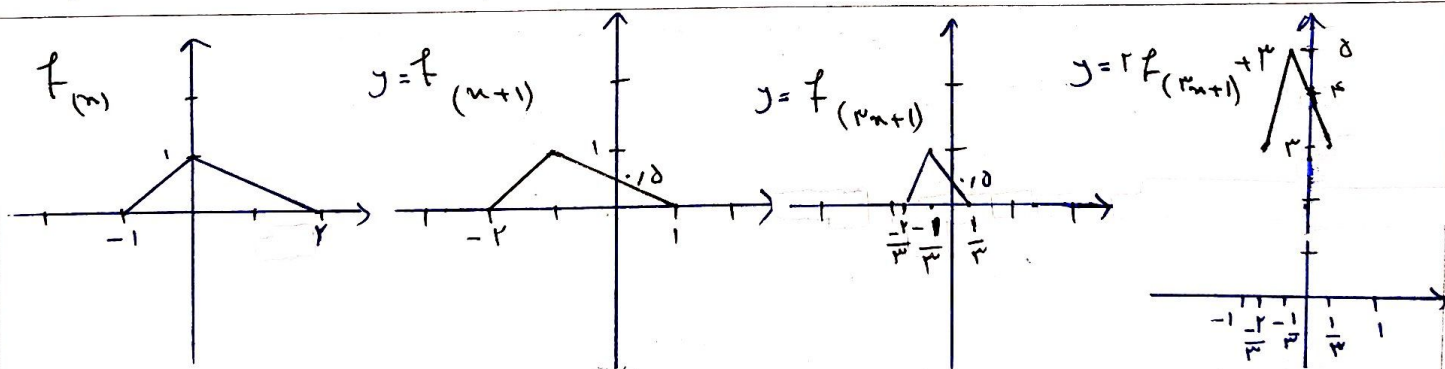
$$D_{f(n-2)} = [-2, 4] \rightarrow D_{f(n)} = [-1, 5]$$

$$-2 \leq n \leq 4 \rightarrow -1 \leq n-2 \leq 5$$

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

$$-1 \leq n \leq 2 \rightarrow -1 \leq \frac{n+1}{r} \leq 8$$

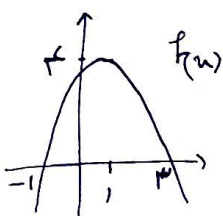
$$-1 \leq r - \delta n \leq 8 \rightarrow -r \leq -\delta n \leq 3 \rightarrow -\frac{r}{\delta} \leq n \leq \frac{3}{\delta}$$



$$J = -\frac{1}{r}x^r + \frac{r}{\delta}x + 1 \rightarrow \text{ext} \left| \frac{r}{\delta} \right| \rightarrow g = a(x-h)^r + k \text{ ext} \left| \frac{r}{\delta} \right|$$

$$\begin{aligned} h=r \\ k=r \\ a=-\frac{1}{r} \end{aligned} \rightarrow g_{(n)} = -\frac{1}{r}(x-r)^r + r \rightarrow -\frac{1}{r}(x-r)^r + r = 0$$

$$\rightarrow x = \begin{cases} 1 \\ 0 \end{cases}$$



$$J = 1 - r f(rn+r) \rightarrow \begin{cases} rn+r=1 \rightarrow n=-\frac{1}{r} \rightarrow n_s = -\frac{1}{r} \\ 1-r f_{(1)} = 1-r = -r \rightarrow g_s = -r \end{cases}$$

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

$$\begin{aligned} f_{(n)} &= -(n+1)(n-r) \rightarrow 1-r f(rn+r) = r(rn+r)(rn-1) + 1 \\ &= rn^2 + rn - r \rightarrow \min \left| -\frac{1}{r} \right| \end{aligned}$$

$$\begin{aligned} D_{f_{(n)}} = (a, r] &\rightarrow D_{f_{(n-1)}} = (a+1, \delta] \\ D_{g_{(n)}} = [-1, b) &\rightarrow D_{g_{(n+1)}} = [-r, b-1) \end{aligned} \rightarrow \begin{cases} a+1 = -r \\ b-1 = \delta \end{cases}$$

$$\rightarrow a-b = -9$$

$$-r \leq x \leq \delta \rightarrow -r \leq \frac{x}{r} + 1 \leq r, \delta \rightarrow D_{g_r} = D_f = [-r, r, \delta]$$

$$R_f = [-1, r] \rightarrow -1 \leq f_{(n)} \leq r \rightarrow -r \leq r f_{(n)} \leq r \rightarrow -\delta \leq r f_{(n)} - r \leq 1$$

$$\rightarrow 0 \leq |r f_{(n)} - r| \leq \delta \rightarrow 0 \leq \sqrt{|r f_{(n)} - r|} \leq \sqrt{\delta} \rightarrow R_{g_r} = [0, \sqrt{\delta}]$$

$$f_{(n)} = \left| \frac{n+1}{rn+1} \right| \rightarrow g_{(n)} = \left| \frac{n-r+1}{r(n-r)+1} \right| + 1 = \left| \frac{n-1}{rn-r} \right| + 1$$

$$x \in (-\infty, -\sqrt{r})$$

$$\rightarrow n + \left| \frac{n-1}{rn-r} \right| + 1 < 0 \rightarrow 1+n < \frac{n-1}{rn-r} < -1-n$$

$$\begin{cases} \frac{n-1}{rn-r} + 1+n < 0 \rightarrow \frac{rn-r}{rn-r} < 0 \rightarrow n \in (-\infty, -\sqrt{r}) \cup (\sqrt{r}, 1, \delta) \end{cases}$$

$$\frac{n-1}{rn-r} - n - 1 > 0 \rightarrow \frac{-rn^2 + rn + r}{rn-r} > 0 \rightarrow n \in (-\infty, \frac{1-\sqrt{\delta}}{r}) \cup (1, \delta, \frac{1+\sqrt{\delta}}{r})$$