

$$1- -r \leq n \leq r \Rightarrow -r \leq rn+1 \leq 1r$$

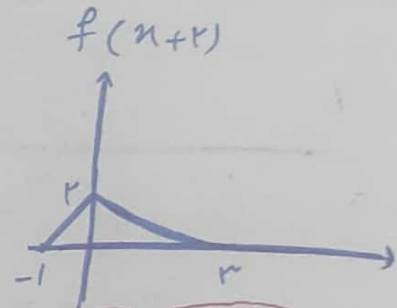
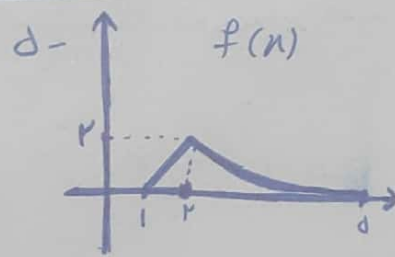
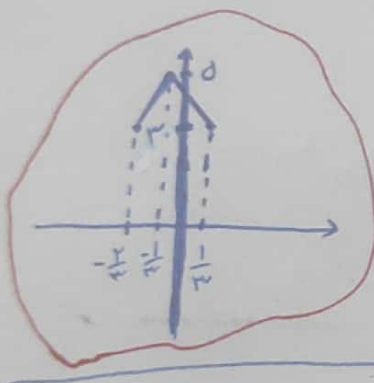
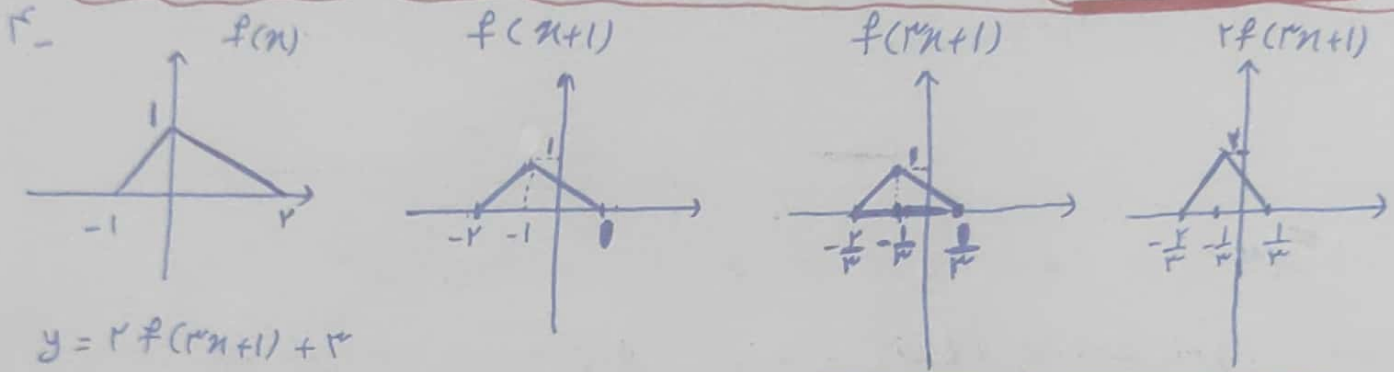
بارها جانتید - دوازدهم پسر آلف

$$\Rightarrow -\frac{r}{\delta} \leq \frac{rn+1}{\delta} \leq \frac{1r}{\delta} \Rightarrow D_{f(\frac{rn+1}{\delta})} = \left[-\frac{r}{\delta}, \frac{1r}{\delta}\right]$$

$$2- -r \leq n \leq r \Rightarrow -1 \leq rn-1 \leq 1 \Rightarrow D_{f(n)} = [-1, 1]$$

$$3- -1 \leq n \leq 1 \Rightarrow -r \leq rn+1 \leq 1 \Rightarrow -1 \leq \frac{rn+1}{r} \leq \delta \Rightarrow D_{f(n)} = [-1, \delta]$$

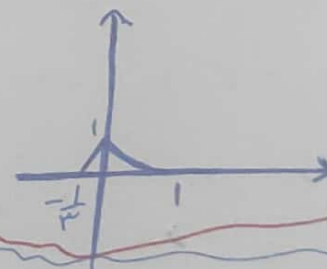
$$-1 \leq r-\delta n \leq \delta \Rightarrow -r \leq -\delta n \leq r \Rightarrow -\frac{r}{\delta} \leq n \leq \frac{r}{\delta} \Rightarrow D_{f(r-\delta n)} = \left(-\frac{r}{\delta}, \frac{r}{\delta}\right]$$



$$f(-rn+r)$$



$$y = \frac{1}{r} f(-rn+r)$$



$$5- \text{ext} \left| \begin{array}{l} n_s = \frac{-r}{-\frac{r}{\delta}} = \frac{r}{\delta} \\ y_s = -\frac{1}{r} \left(\frac{r}{\delta} \right) + \frac{r}{\delta} \left(\frac{r}{\delta} \right) + 1 = \frac{r\delta}{r\delta} \end{array} \right.$$

$$\frac{r}{\delta} + \alpha = r \Rightarrow \alpha = \frac{r\delta}{\delta}$$

$$\frac{r\delta}{r\delta} + \beta = r \Rightarrow \beta = \frac{r\delta}{r\delta}$$

$$y = -\frac{1}{r} n^r + \frac{r}{\delta} n + 1 = -\frac{r\delta}{r\delta} \Rightarrow -r\delta n^r + r\delta n + \delta = -1 \Rightarrow r\delta n^r - r\delta n - \delta = 0$$

$$\Rightarrow (\delta n - 1)(\delta n + 1) = 0 \Rightarrow \begin{cases} n_1 = \frac{1}{\delta} \xrightarrow{+\alpha} n_1 = \frac{1}{\delta} + \frac{1}{\delta} = \frac{2}{\delta} = \boxed{2} \\ n_2 = -\frac{1}{\delta} \xrightarrow{+\alpha} n_2 = -\frac{1}{\delta} + \frac{1}{\delta} = 0 = \boxed{0} \end{cases}$$

$$V- \left. \begin{aligned} 3\alpha + 2 &= 1 \Rightarrow \alpha = -\frac{1}{3} \\ 1 - 2f(1) &= -V \Rightarrow \beta = -V \end{aligned} \right\} \Rightarrow \boxed{\alpha\beta = \frac{V}{3}}$$

$$\wedge- \left. \begin{aligned} D_{f(n-1)} &= (a+1, c+1) = (a+1, d) \\ D_{f(n+1)} &= (-1-1, b-1) = (-2, b-1) \\ D_{f(n-1)} \cap D_{f(n+1)} &= (-2, d) \end{aligned} \right\} \Rightarrow \begin{cases} a+1 = -2 \Rightarrow a = -3 \\ b-1 = d \Rightarrow b = d \end{cases}$$

$$a - b = -3 - d = \boxed{-9}$$

$$9- \Rightarrow -3 \leq n \leq d \Rightarrow -ord \leq \frac{n}{r} + 1 \leq 3, d \Rightarrow D_{f(n)} = [-ord, 3, d]$$

I: چون تابع به صورت $y_r = \sqrt{2f(n) - 3}$ است پس متناهی باید به دامنه تابع $f(n)$ تعلق داشته باشد
 $(= |2f(n) - 3| \geq 0)$ معنایه می‌دهد است

$$\Rightarrow \boxed{D_{y_r} = [-ord, 3, d]}$$

$$R_{y_r} = R_{f(\frac{n}{r}+1)} = R_{f(n)} \Rightarrow 1 \leq f(n) \leq r \Rightarrow -d \leq 2f(n) - 3 \leq 1$$

$$\Rightarrow 0 \leq |2f(n) - 3| \leq d \Rightarrow 0 \leq y_r \leq \sqrt{d} \Rightarrow \boxed{R_{y_r} = [0, \sqrt{d}]}$$

$$10- g(n) = f(n-r) + 1 = \left| \frac{(n-r)+1}{r(n-r)+1} \right| + 1 = \left| \frac{n-1}{rn-r} \right| + 1$$

$$\left. \begin{aligned} g(n) + n &< 0 \\ g(n) &> 0 \end{aligned} \right\} \Rightarrow n < 0 \Rightarrow g(n) = \frac{n-1}{rn-r} + 1 = \frac{rn-r}{rn-r}$$

$$\Rightarrow g(n) + n = \frac{rn-r}{rn-r} + n \stackrel{n < 0}{\Rightarrow rn-r < 0} \stackrel{\times(rn-r)}{\Rightarrow} rn-r + rn^2 - rn > 0$$

$$\Rightarrow rn^2 - r > 0 \Rightarrow n^2 > r \Rightarrow \begin{cases} n > \sqrt{r} \\ n < -\sqrt{r} \end{cases} \stackrel{n < 0}{\Rightarrow} \boxed{n < -\sqrt{r}}$$