

الف) $y = \frac{n+3}{2n^3+3n^2-11n+3} = \frac{n+3}{(n-1)(2n^2+4n-3)} = \frac{n+3}{(n-1)(n+3)(2n-1)} \rightarrow (n-1)(n+3)(2n-1) \neq 0$
 $\rightarrow n \neq \{1, -3, \frac{1}{2}\} \Rightarrow D_f = \mathbb{R} - \{1, -3, \frac{1}{2}\}$ ۵

ب) $y = \frac{n+3}{2n^3+9n^2+10n+3} = \frac{n+3}{(n+1)(2n^2+7n+3)} = \frac{n+3}{(n+1)(2n+1)(n+3)}$
 $\rightarrow (n+1)(2n+1)(n+3) \neq 0 \rightarrow n \neq \{-\frac{1}{2}, -3\} \Rightarrow D_f = \mathbb{R} - \{-\frac{1}{2}, -3\}$ ۵

ج) $y = \frac{n+3}{n^3-2n^2+2n-1} = \frac{n+3}{(n-1)(n^2-n+1)} \xrightarrow{\frac{n^2-n+1}{n^2-n+1}} \frac{n+3}{n-1} \rightarrow n-1 \neq 0 \rightarrow n \neq 1$
 $\Rightarrow D_f = \mathbb{R} - \{1\}$ ۵

د) $y = \sqrt{\frac{n+3}{n^3-2n^2+2n-1}} = \sqrt{\frac{(n+3)}{(n-1)(n^2-n+1)}} \xrightarrow{\frac{n^2-n+1}{n^2-n+1}} \frac{n+3}{n-1} \geq 0$
 $\Rightarrow D_f = (-\infty, -3] \cup (1, +\infty)$ ۵

$y = \frac{r}{n^2-5|n-1|-2n+5} \quad D_f = \mathbb{R} - \{-3, 0, 2, 5\}$ ۵

$\frac{r}{n^2+2n} \quad \frac{r}{n^2-5n+6}$

$\rightarrow n^2+2n \neq 0 \rightarrow n(n+2) \neq 0 \rightarrow n \neq \{0, -2\}$
 $\rightarrow n^2-5n+6 \neq 0 \rightarrow (n-2)(n-3) \neq 0 \rightarrow n \neq \{2, 3\}$

ه) $y = \frac{n+3}{|2n+1|-|n+3|} \rightarrow |2n+1|-|n+3| \neq 0 \rightarrow |2n+1| \neq |n+3| \xrightarrow{()^2} 4n^2+4n+1 \neq n^2+6n+9$
 $\Rightarrow 3n^2-2n-8 \neq 0 \rightarrow (n-2)(3n+4) \neq 0 \rightarrow n \neq \{2, -\frac{4}{3}\}$
 $\rightarrow D_f = \mathbb{R} - \{2, -\frac{4}{3}\}$ ۵

ب) $\sqrt{|2n+1|-|n+3|} \rightarrow |2n+1|-|n+3| \geq 0 \rightarrow |2n+1| \geq |n+3| \xrightarrow{()^2} 4n^2+4n+1 \geq n^2+6n+9$
 $\Rightarrow 3n^2-2n-8 \geq 0 \rightarrow (n-2)(3n+4) \geq 0 \Rightarrow D_f = \mathbb{R} - (-\frac{4}{3}, 2)$ ۵

و) $y = \log_r(1-\log_r^n) \xrightarrow{n>0} 1-\log_r^n > 0 \rightarrow \log_r^n < 1 \rightarrow n < r \Rightarrow D_f = (0, r)$ ۵

ب) $y = \log_r(1-\log_r^n) \xrightarrow{n>0} 1-\log_r^n > 0 \rightarrow \log_r^n < 1 \rightarrow n > \frac{1}{r} \Rightarrow D_f = (\frac{1}{r}, +\infty)$ ۵

$$f(n) = \sqrt{\log_{0.5} \log_{0.5} (r_n - 1)}$$

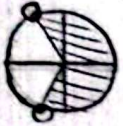
$$r_n - 1 > 0 \rightarrow n > \frac{1}{r}$$

$$\log_{0.5} (r_n - 1) > 0 \rightarrow r_n - 1 > 1 \rightarrow n > 1$$

$$\log_{0.5} \log_{0.5} (r_n - 1) > 0 \rightarrow \log_{0.5} (r_n - 1) < 1 \rightarrow r_n - 1 < 0.5 \rightarrow n < 2$$

$$\rightarrow D_f = (1, 2]$$

$$ii) y = \log(r \cos n + 1) \rightarrow r \cos n + 1 > 0 \rightarrow \cos n > -\frac{1}{r}$$



$$\Rightarrow D_f = \left(r\pi - \frac{\pi}{r}, r\pi + \frac{\pi}{r} \right)$$

$$b) y = \sqrt{\log \frac{n-1}{n+1}} \rightarrow \frac{n-1}{n+1} > 0 \rightarrow \frac{-1}{+1} < \frac{1}{-1} < +$$

$$\log \frac{n-1}{n+1} > 0 \rightarrow \frac{n-1}{n+1} > 1 \rightarrow \frac{-r}{n+1} > 0 \rightarrow n+1 < 0 \rightarrow n < -1$$

$$\rightarrow D_f = (-\infty, -1)$$

$$f(n) = \sqrt{(a+r)n^2 + an + b}$$

$$a > 0 \rightarrow \text{نقطه به نقطه از سمت چپ به سمت راست} \rightarrow \text{نقطه به نقطه از سمت راست به سمت چپ} \rightarrow a+r > 0 \rightarrow a > -r$$

$$f(n) = \sqrt{-n^2 + b} \xrightarrow[n \geq 0]{n \geq r} 0 \leq \sqrt{-n^2 + b} \rightarrow [b, 0]$$

$$f(n) = \sqrt{n^2 + r_n + r_m n^2}$$

$$D_f = \mathbb{R} \rightarrow \frac{-2}{-1 \pm 2} = -1 \pm 2 \rightarrow \Delta < 0$$

$$\rightarrow r^2 - \frac{r(r-m^2)}{-1+r_m r} < 0 \rightarrow r_m^2 - r < 0 \rightarrow r(m-1)(m+1) < 0$$

$$\Rightarrow -1 < m < 1 \rightarrow 1 - (-1) = 2 \rightarrow [2]$$

$$f(n) = \frac{\sqrt{r-n^2}}{[n] + [-n] + 1} \rightarrow [n] + [-n] + 1 \neq 0 \rightarrow [n] + [-n] \neq -1 \rightarrow n \in \mathbb{Z}$$

$$r-n^2 \geq 0 \rightarrow n^2 \leq r \rightarrow -\sqrt{r} \leq n \leq \sqrt{r}$$

$$\Rightarrow D_f = \{-\sqrt{r}, -1, 0, 1, \sqrt{r}\} \Rightarrow \left| \sum_{n=-\infty}^{\infty} r_n \right|$$