

Atmosphere

چهار فرسوی

۳. اے

الف) $y = \frac{n+r}{r^n + r^{n-1} + \dots + 1} - \frac{n+r}{(n-1)(r^n + \dots + r)}$ ①

$$\frac{r_n^r + r_{n-1}^r - \lambda n + r}{-r_n^r + r_{n-1}^r} \mid \frac{n-1}{r_n^r + \delta n - r} \quad n \neq 1$$

$$r(n+r)(n-\frac{1}{r}) \neq 0$$

$$(n+r)(r_{n-1}) \neq 0$$

$$z \neq -r$$

$$r_{n-1} \neq 0$$

$$r_2 \neq 1 \rightarrow r \neq \frac{1}{r}$$

$$D_f = \mathbb{R} - \left\{ 1, -r, \frac{1}{r} \right\}$$

$$\hookrightarrow y = \frac{n+r}{r^2 + 9n^2 + 1 \cdot n+r} = \frac{n+r}{(n+1)(r^2 + \sqrt{n+r})}$$

$$\begin{array}{l|l} P_{2n}^r + 9P_n^r + 10P_n + r & n+1 \\ \hline -P_{2n}^r - P_n^r & P_{2n}^r + V_{2n} + r \end{array} \quad \begin{array}{l} n \neq -1 \\ P_{2n}^r + V_{2n} + r \neq 0 \end{array}$$

$$(n+1)(n+1) \neq 0$$

३७-३

$$x = -\frac{1}{y}$$

$$D_f = \mathbb{R} - \left\{ -1, -5, \frac{1}{r} \right\}$$



$$\text{أ) } y = \frac{n+r}{n^2 - rn + r - 1} = \frac{n+r}{(n-1)(n^2 - n + 1)} \quad (2)$$

$$\begin{array}{r|l} n^2 - rn + r - 1 & n-1 \\ -n^2 + n & \\ \hline -n^2 + rn - 1 & \\ \hline n^2 - n & \\ \hline n-1 & \\ \hline -n+1 & \\ \hline 0 & \end{array}$$

$$n-1 \neq 0 \rightarrow n \neq 1$$

$$n^2 - n + 1 \neq 0 \rightarrow \text{مميزه}$$

$$D_f = \mathbb{R} - \{1\}$$

$$\hookrightarrow y = \sqrt{\frac{n+r}{n^2 - rn + r - 1}} = \sqrt{\frac{n+r}{(n-1)(n^2 - n + 1)}}$$

$$\frac{n+r}{(n-1)(n^2 - n + 1)} \geq 0$$

$$\begin{array}{c} -r \quad 1 \\ | \quad | \\ + \quad - \quad + \end{array}$$

$$D_f = (-\infty, -r] \cup (1, +\infty)$$

$$y = \frac{r}{n^2 - \delta|n-1| - rn + \delta} \quad (3)$$

$$n^2 - \delta n + \delta - rn + \delta \neq 0 \rightarrow n^2 - rn + \delta \neq 0$$

$$(n-r)(n-\delta) \neq 0$$

$$n \neq r, \delta$$

$$n^2 + \delta n - \delta - rn + \delta \neq 0 \rightarrow n^2 + rn \neq 0$$

$$n(n+r) \neq 0$$

$$D_f = \mathbb{R} - \{r, \delta, 0, -r\}$$

$$n \neq 0, -r$$

$$|x+1|^r \neq |x+r|^r$$

موضوع:

$$x^r + 1 + x \neq x^r + 9 + 4x$$

$$x^r - x - 8 \neq 0 \rightarrow (x-r)(x+r) \neq 0$$

$$x \neq r$$

$$x \neq -\frac{r}{r}$$

(ع)

$$\text{أ) } y = \frac{x+r}{|x+1| - |x+r|}$$

$$|x+1| \neq |x+r| \rightarrow x \neq r \rightarrow x+1 \neq x+r$$

$$\rightarrow x \neq r \rightarrow x \neq +r$$

$$\rightarrow x \neq r \rightarrow x+1 \neq -x-r$$

$$\rightarrow x \neq r \rightarrow x \neq -\frac{r}{r}$$

$$x \neq -\frac{r}{r}$$

$$D_f = \mathbb{R} - \left\{ -\frac{r}{r}, r \right\}$$

$$D_f = \mathbb{R} - \left\{ -\frac{r}{r}, r \right\}$$

$$\text{ب) } y = \sqrt{|x+1| - |x+r|}$$

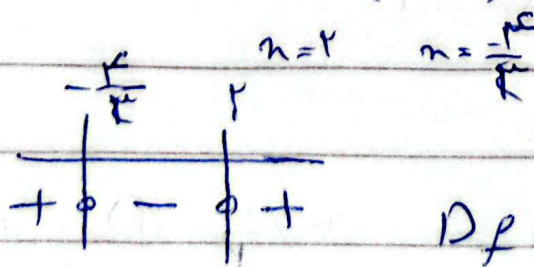
$$|x+1| - |x+r| \geq 0$$

$$|x+1| \geq |x+r|$$

$$x^r + 1 + x \geq x^r + 9 + 4x$$

$$x^r - x - 8 \geq 0$$

$$(x-r)(x+r) \geq 0$$



$$D_f = (-\infty, -\frac{r}{r}] \cup [r, +\infty)$$

⑤

$$\text{الف) } y = \log_r (1 - \log_r^n)$$

$$n > 0 \quad (1)$$

$$1 - \log_r^n > 0$$

$$1 > \log_r^n \rightarrow r > n \quad (2)$$

$$(1) \cap (2) \Rightarrow 0 < n < r$$

$$D_f = (0, r)$$

$$\text{ب) } y = \log_r (1 - \log_{\frac{1}{r}}^n)$$

$$n > 0 \quad (1)$$

$$1 - \log_{\frac{1}{r}}^n > 0 \rightarrow 1 > \log_{\frac{1}{r}}^n \rightarrow \frac{1}{r} < n \quad (2)$$

$$(1) \cap (2) \Rightarrow \frac{1}{r} < n$$

$$D_f = (\frac{1}{r}, +\infty)$$

$$f(n) = \sqrt{\log_a \log_a (f_{n-1})}$$

⑥

$$f_{n-1} > 0 \rightarrow f_n > 1 \rightarrow n > \frac{1}{r} \quad (1)$$

$$\log_a f_{n-1} > 0 \rightarrow f_{n-1} > 1 \rightarrow f_n > 2 \rightarrow n > 1 \quad (2)$$

$$\log_a \log_a (f_{n-1}) > 0 \rightarrow \log_a f_{n-1} > 1 \rightarrow f_{n-1} > a \rightarrow f_n > 4 \rightarrow n > \frac{1}{r^2}$$

$$f_{n-1} < a \rightarrow f_n < 4 \rightarrow n < \frac{1}{r^2}$$

$$\textcircled{1} \cap \textcircled{P} \cap \textcircled{R} \Rightarrow \text{domain } (1, \frac{1}{r}]$$

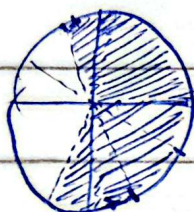
$$D_f = \text{domain } (1, \frac{1}{r}]$$

$$\text{الف) } y = \log(r \cos n + 1) \quad \textcircled{V}$$

$$r \cos n + 1 > 0$$

$$r \cos n > -1$$

$$\cos n > -\frac{1}{r}$$



$$D_f = (rK\pi - \frac{r\pi}{r}, rK\pi + \frac{r\pi}{r})$$

$$\text{ب) } y = \sqrt{\log \frac{n-1}{n+1}}$$

$$\frac{n-1}{n+1} > 0 \quad \begin{array}{c} -1 \\ + \frac{1}{r} - \frac{1}{r} + \end{array} \quad (-\infty, -1) \cup (1, +\infty) \quad \textcircled{1}$$

$$\log \frac{n-1}{n+1} \geq 0 \rightarrow \frac{n-1}{n+1} \geq 1 \rightarrow \frac{n-1}{n+1} - 1 \geq 0$$

$$\frac{n-1-n-1}{n+1} \geq 0 \rightarrow \frac{-2}{n+1} \geq 0 \quad \begin{array}{c} -1 \\ + \frac{1}{r} - \end{array}$$

$$(-\infty, -1) \quad \textcircled{2}$$

$$\textcircled{1} \cap \textcircled{2} \Rightarrow D_f = (-\infty, -1)$$

$$f(x) = \sqrt{(a+x)x^2 + ax + b}$$

مربع x^2 و x و 1 مع

①

$$a+x=0 \rightarrow a=-x$$

$$-x^2 + b \geq 0$$

$$x=1 \rightarrow -1 + b = 0 \rightarrow \boxed{b=1}$$

$$f(x) = \sqrt{x^2 + 2x + m^2}$$

②

$$x^2 + 2x + m^2 \geq 0 \rightarrow \text{مربع کامل}$$

$$D_f = \mathbb{R}$$

$$\Delta = 0 \Leftrightarrow \text{یک ریشه یکتا دارد}$$

$$b^2 - 4ac = 0$$

$$4 - 4(1-m^2) = 0$$

$$4 - 4 + 4m^2 = 0 \rightarrow 4m^2 = 0 \rightarrow m^2 = 0 \rightarrow m = 0$$

$$\text{فاصله بین ریشه ها} = 1 - (-1) = \boxed{2}$$



$$\sqrt{1-n^2}$$

(10)

$$[n] + [-n] + 1$$

$$n \in \mathbb{Z} \Rightarrow [n] + [-n] = 0$$

$$\frac{\sqrt{1-n^2}}{1}$$

$$\frac{-2}{-1} + \frac{2}{1} \rightarrow [-2, 2]$$

$$D_f = -2, -1, 0, 1, 2 \rightarrow \boxed{\text{مجموعه}}$$