

نام و نام خانوادگی لیانا لایتنرکی پاسخنامه تشریحی تکلیف شماره ۶ کلاس ۹م دفتر ۱۱م

الف) $\frac{x^2 - 6x}{x^3 - x} \geq 0 \Rightarrow \frac{x(x-6)}{x(x^2-1)} \geq 0 \Rightarrow \frac{-1 \quad 0 \quad 1 \quad 6}{+ \quad - \quad + \quad -}$ $Df = [6, +\infty) \cup (0, 1) \cup (-\infty, -1)$

ب) $\frac{x^5 - x^3}{x^5 - x} \geq 0 \Rightarrow \frac{x^3(x^2-1)}{x(x^2-1)} \geq 0 \Rightarrow \frac{-1 \quad 0 \quad 1}{+ \quad - \quad +}$ $Df = \mathbb{R} - \{0, \pm 1\}$

الف) $x + |x| > 0 \rightarrow |x| > -x \rightarrow Df = \mathbb{R}$

ب) $x|x| > 0 \rightarrow Df = \mathbb{R}^+ - \{0\}$

الف) $\lfloor x \rfloor \geq 0 \rightarrow \lfloor x \rfloor \leq 1 \rightarrow x < 2 \Rightarrow Df = (-\infty, 2)$

ب) $\lfloor x \rfloor > 0 \rightarrow \lfloor x \rfloor < 2 \rightarrow x < 2 \Rightarrow Df = (-\infty, 2)$

الف) $\left\lceil x - \frac{1}{p} \right\rceil + \left\lceil x + \frac{p}{p} \right\rceil \geq 0 \rightarrow \left\lceil x + \frac{p}{p} - 1 \right\rceil + \left\lceil x + \frac{p}{p} \right\rceil \geq 0 \rightarrow \left\lceil x + \frac{p}{p} \right\rceil \geq 1 \rightarrow \left\lceil x + \frac{p}{p} \right\rceil \geq \frac{1}{p}$
 $x + \frac{p}{p} \geq 1 \rightarrow x \geq \frac{1}{p} \Rightarrow Df = \left[\frac{1}{p}, +\infty\right)$

ب) $\left\lceil x - \frac{1}{p} \right\rceil + \left\lceil -\left(x - \frac{1}{p}\right) \right\rceil \geq 0 \quad a \in \mathbb{Z} \xrightarrow{\text{if}} \lceil a \rceil + \lceil -a \rceil = 0 \rightarrow x - \frac{1}{p} \in \mathbb{Z}$
 $Df = \left\{ x \mid x = k + \frac{1}{p}, k \in \mathbb{Z} \right\}$

الف) $\sin x - 1 \neq 0 \rightarrow \sin x \neq 1 \quad Df = \mathbb{R} - \left\{ 2k\pi + \frac{\pi}{2} \right\}$

ب) $\sqrt[p]{\sin x} - 1 \neq 0 \rightarrow \sin^p x \neq \frac{1}{p} \Rightarrow \sin x \neq \pm \frac{1}{\sqrt[p]{p}} \rightarrow \sin x \neq \pm \frac{\sqrt[p]{p}}{p}$

$Df = \mathbb{R} - \left\{ k\pi \pm \frac{\pi}{p} \right\}$

الف) $r \sin n - 1 \geq 0 \rightarrow \sin n \geq \frac{1}{r}$ $Df = \left[rk\pi + \frac{\pi}{r}, rk\pi + \frac{\omega\pi}{r} \right]$

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ب) $\cos n - 1 \geq 0 \rightarrow \cos n \geq 1$ $Df = [rk\pi]$

الف) $-1 \leq |n| - r \leq 1 \rightarrow r \leq |n| \leq r$ $\begin{cases} r \leq n \leq r \\ -r \leq n \leq -r \end{cases} \Rightarrow Df = [r, r] \cup [-r, -r]$

① $\frac{0}{+ \phi - \phi +}$ ② $\frac{-1}{+ \phi - \phi +}$ $Df = [-1, 0] \cup [-r, -r]$

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ب) $-1 \leq n^r + r_{n+1} \leq 1 \rightarrow \begin{cases} n^r + r_{n+1} \leq 1 \rightarrow n^r + r_n \leq 0 \rightarrow n(n+r) \leq 0 & ① \\ -1 \leq n^r + r_{n+1} \rightarrow 0 \leq n^r + r_{n+1} \rightarrow 0 \leq (n+1)(n+r) & ② \end{cases}$

الف) $\begin{cases} n-r > 0 \rightarrow n > 0 \\ r \cdot \log_{\frac{1}{r}}(n-r) \geq 0 \rightarrow \log_{\frac{1}{r}}(n-r) \leq r \Rightarrow n-r \leq r^r \rightarrow n \leq 11 \end{cases} \Rightarrow Df = (0, 11]$

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ب) $n^r - n > 0 \Rightarrow n(n^{r-1} - 1) \Rightarrow \frac{-1}{+ \phi - \phi +}$ $Df = (-1, 0) \cup (1, +\infty)$

الف) $f^{n+1} \neq 0 \rightarrow f^n \neq -1 \Rightarrow Df = \mathbb{R}$

ب) $f^n - 1 \neq 0 \rightarrow f^n \neq 1 \Rightarrow n \neq 0 \rightarrow Df = \mathbb{R} - \{0\}$

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ج) $f^{n-r} \neq 0 \rightarrow f^n \neq r \Rightarrow n \neq \log_{\frac{1}{r}} r \Rightarrow Df = \mathbb{R} - \left\{ \log_{\frac{1}{r}} r \right\}$

د) $f^{n-r} \neq 0 \rightarrow f^n \neq r \Rightarrow n \neq \log_{\frac{1}{r}} r \Rightarrow Df = \mathbb{R} - \left\{ \log_{\frac{1}{r}} r \right\}$

الف) $f_{n+1} \in \omega \rightarrow n \in \omega - \frac{1}{r} \Rightarrow Df = \left\{ n \mid n = k - \frac{1}{r}, k \in \omega \right\}$

ب) $\frac{r_n - r}{r_n - \omega} \in \omega \rightarrow r_n - r = r_n \omega - \omega \rightarrow r_n - r_n \omega = -\omega \omega + r \rightarrow n = \frac{-\omega \omega + r}{-r \omega + r}$

$Df = \left\{ n \mid n = \frac{\omega k - r}{rk - r}, k \in \omega \right\}$

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