

۲۱

یکشنبه

(۴۰)

نحوه نوشتن

نکات یا زده‌ها

دست‌نویس

11 August 2024

مرداد ۱۴۰۳

۱۴۴۶ صفر

۵ $k = 2 + 9 = 11$

سوال (۱) $2x^2 + y^2 - 4x + 4y + k = 0 \rightarrow 2x^2 - 4x + 2 + y^2 + 4y + 4 = 0$
 $\frac{2(x^2 - 2x + 1)}{2x(x-1)^2} + \frac{(y+2)^2}{(y+2)^2} = 0$

سوال (۲) $f(x) = \begin{cases} x^2 + 4x & x \geq a \\ 2x + a + 2 & x \leq a \end{cases}$
 $\xrightarrow{x \geq a} \begin{cases} a^2 + 4a \geq 2a + a + 2 \\ a^2 + a - 2 \geq 0 \end{cases} \Rightarrow (a+2)(a-1) \geq 0$

۱۰ $x=1 \rightarrow x^2 + 4x = 1 + 4 = 5$

سوال (۳) $f(x) = \begin{cases} 2x^2 - b & |x+1| \geq 2 \Rightarrow x+1 \geq 2 \Rightarrow x \geq 1 \\ a+2x & -2 \leq x \leq -1 \Rightarrow x+1 \leq -2 \Rightarrow x \leq -3 \end{cases}$

۱۲ $x=3 \rightarrow x-b = a-4 \Rightarrow a+b = 24$

سوال (۴) $\begin{cases} 4x-a \geq 0 \\ b-2x \geq 0 \end{cases} \Rightarrow \begin{cases} x \geq \frac{a}{4} \\ x \leq \frac{b}{2} \end{cases} \Rightarrow \frac{a}{4} \leq \frac{b}{2} \Rightarrow \frac{a}{2} \leq b \Rightarrow \frac{b}{a} \geq \frac{1}{2}$

سوال (۵) $y = \sqrt{\frac{x+1}{|x-3|}} + \sqrt{\frac{4-x}{x^2+2x+5}}$
 $\frac{x+1}{|x-3|} \geq 0 \Rightarrow \frac{-1}{x-3} \geq 0$

$\frac{4-x}{x^2+2x+5} \geq 0 \Rightarrow 4-x \geq 0 \Rightarrow x \leq 4$
 $\Delta = 4 - 14 = -10 < 0 \Rightarrow$ هیچ جوابی ندارد
 $\Rightarrow \text{مجموع جوابها} = [-1, 4] - \{3\}$

$$14 \rightarrow y = \sqrt{[u] - l} + \sqrt{r - [u]} \quad [u] - l > 0 \Rightarrow [u] > l \Rightarrow [l, +\infty) \textcircled{1}$$

$$r - [u] > 0 \Rightarrow [u] < r \Rightarrow (-\infty, r) \textcircled{2} \quad \text{سوال 5}$$

✓ (5)

$$\textcircled{1} \cap \textcircled{2} \rightarrow D_f = \emptyset$$

سوال ۶)

$$y_2 = \sqrt{\frac{n^2 - n - 6}{n^4 - 13n^2 + 36}} \geq 0 \rightarrow \frac{n^2 - n - 6}{n^4 - 13n^2 + 36} \rightarrow \frac{(n-3)(n+2)}{(n^2-4)(n^2-9)}$$

$$+ \frac{-3}{-3} - \frac{2}{-2} - \frac{2}{2} + \frac{3}{3} + \dots \rightarrow \frac{(n^2-4)(n^2-9)}{(n^2-4)(n^2-9)} \rightarrow \frac{(n^2-4)(n^2-9)}{(n^2-4)(n^2-9)}$$

روز حمایت از صنایع کوچک

۱) $y = \sqrt{\frac{x^3 - 2x^2 - 4x + 7}{x^3 + 2x^2 - 4x - 7}}$

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

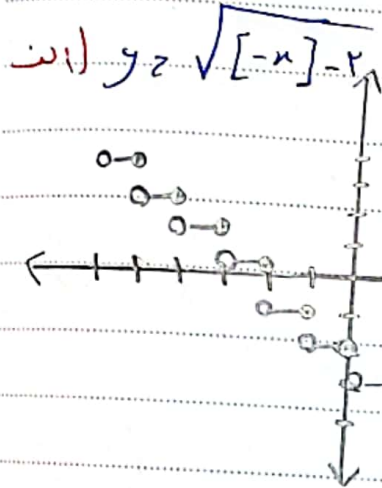
$$\begin{array}{r} x^3 - 2x^2 - 4x + 7 \quad | \quad n-1 \\ -x^3 + 2x^2 \\ \hline -4x + 7 \\ -4x + 4 \\ \hline 3 \end{array}$$

$$\begin{array}{r} x^3 + 2x^2 - 4x - 7 \quad | \quad n+1 \\ -x^3 - 2x^2 \\ \hline -4x - 7 \\ -4x - 4 \\ \hline -3 \end{array}$$

$$\begin{array}{r} x^3 + 2x^2 - 4x - 7 \quad | \quad n+1 \\ -x^3 - 2x^2 \\ \hline -4x - 7 \\ -4x - 4 \\ \hline -3 \end{array}$$

$$\frac{-1}{-1} \frac{-2}{-2} \frac{-1}{-1} \frac{1}{1} \frac{2}{2} \frac{2}{2}$$

$D_f = (-\infty, -3) \cup [-2, -1) \cup [1, 2) \cup [3, +\infty)$



$y = \sqrt{-x-2}$

$[-x-2] \geq 0$
 $\Rightarrow x \leq -2$

$D_f = (-\infty, -2]$

۲) $y = \frac{5x^2 + 7}{[x]^2 \sqrt{[x]-3}}$

$[x]^2 \sqrt{[x]-3} \neq 0$

$([x]-3)([x]+1) \neq 0$

$[x] \neq 3 \Rightarrow x \notin [3, 4)$

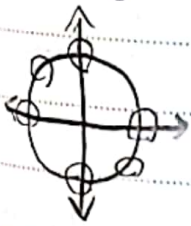
$[x] \neq -1 \Rightarrow x \notin [-1, 0)$

$D_f = \mathbb{R} - [3, 4) - [-1, 0)$

۳) $y = \frac{\cot x + 1}{\tan x + 1}$

$\tan x + 1 \neq 0$

$\Rightarrow \tan x \neq -1$



$D_f = \mathbb{R} - \left\{ \frac{k\pi}{2}, k\pi - \frac{\pi}{4} \right\}$

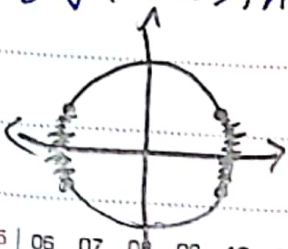
۴) $y = \sqrt{1 - \epsilon \sin^2 x}$

$1 - \epsilon \sin^2 x \geq 0$

$\epsilon \sin^2 x \leq 1 \Rightarrow \sin^2 x \leq \frac{1}{\epsilon}$

$\Rightarrow \frac{1}{\epsilon} \leq \sin^2 x \leq 1$

$D_f = \left[k\pi - \frac{\pi}{4}, k\pi + \frac{\pi}{4} \right]$



۱۴۴۶ صفر

$$y_2 \sqrt{1 - \log \frac{n-1}{\frac{1}{r}}} \quad n-1 > 0 \Rightarrow n > 1 \quad (1)$$

(سوال ۹)

$$1 - \log \frac{n-1}{\frac{1}{r}} \geq 0 \Rightarrow \log \frac{n-1}{\frac{1}{r}} \leq 1 \Rightarrow n-1 \geq \frac{1}{r} \Rightarrow n \geq \frac{1}{r} \quad (2)$$

$$(1) \cap (2) \Rightarrow Df_2 \left[\frac{1}{r}, +\infty \right) \rightarrow \frac{1}{r-r+r} (-\infty, 0] \cup [1, +\infty)$$

9

$$y_2 \sqrt{\frac{n^2 - n}{1 - \log \frac{n^2 - n}{r}}} \quad n^2 - n \geq 0 \Rightarrow n(n-1) \geq 0$$

$$1 - \log \frac{n^2 - n}{r} \neq 0 \Rightarrow \log \frac{n^2 - n}{r} \neq 1 \quad n \neq r, n \neq -1 \quad (3)$$

$$\Rightarrow n^2 - n - r \neq 0 \Rightarrow (n-r)(n+1) \neq 0 \quad n \neq r, n \neq -1 \quad (4)$$

$$(1) \cap (2) \cap (3) \cap (4)$$

$$\Rightarrow Df_2(-\infty, 0) \cup (r, +\infty) - \{r-1\}$$

$$y_2 \sqrt{\frac{\epsilon n - n^2}{r} - 1} \Rightarrow \frac{\epsilon n - n^2}{r} - 1 \geq 0 \Rightarrow \frac{-n^2 + \epsilon n}{r} \geq 1 \quad (سوال ۱۰)$$

12

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

$$Df_2 [1, r]$$

13

$$y_2 \left(\frac{r_n + a}{r_n + \epsilon} \right)! \quad \frac{r_n + a}{r_n + \epsilon} \in W \Rightarrow n \in \frac{-\epsilon W + a}{r W - r}$$

$$Df_2 \left\{ n \mid n = \frac{a - \epsilon k}{r k - r}, k \in W \right\}$$

15

16