

17, 100

نام و نام خانوادگی سیامه پاسخنامه تشریحی تکلیف شماره ۲ کلاس گروه (۱۰۰٪)

$2x^2 + y^2 - 5x + 4y + k = 0$ (تابع ناآهی) $k = ?$ (11)

$2x^2 - 5x + y^2 + 4y + k = 0$

$2(x^2 - \frac{5}{2}x) + (y^2 + 4y) + k = 0$

$\rightarrow (x-1)^2 - 1$

$2(x-1)^2 - 2$

$\Rightarrow 2(x-1)^2 + (y+2)^2 + (k-11) = 0$
 $2(x-1)^2 + (y+2)^2 = 0$

$f(x) = \begin{cases} x^2 + 5x; & x \geq a \\ x^2 + 1; & x < a \end{cases} \Rightarrow 1 + 5 = 2 + a + 2$
 $f(1) = ?$ $a > 0$
 $a = 1$ مثلا

$f(1) = \begin{cases} 1 + 5 & 1 \geq a \\ a + 1 & a > 1 \end{cases} \Rightarrow f(1) = 6$

$f(x) = \begin{cases} 2x^2 - b; & |x+1| \geq 2 \\ a + 2x; & -2 \leq x \leq 1 \end{cases}$
 $a + b = ?$
 $x+1 \geq 2 \rightarrow x \geq 1$
 $x+1 \leq -2 \rightarrow x \leq -3$
 $\cap \rightarrow \{x \mid x \geq 1 \text{ or } x \leq -3\}$

$x = 1$
 1) $2x^2 - b = a + 2x \Rightarrow a + b = 0$
 $x = -3$
 2) $2x^2 - b = a + 2x \Rightarrow a + b = 18$

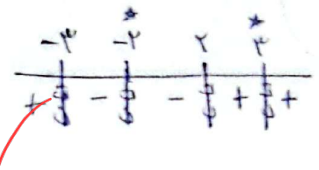
$y = \sqrt{9x-a} + \sqrt{b-3x}$ $Dy = \{r\}$ $\frac{b}{a} = ? \frac{1}{r}$

$12-a \geq 0$ $b-9 \geq 0$
 $12 \geq a$ $b \geq 9$
 $\frac{9}{12} = \frac{1}{r}$

$y = \sqrt{\frac{x+1}{|x-3|}} + \sqrt{\frac{4-x}{x^2+2x+5}}$ $y = \sqrt{[x]-4} + \sqrt{2-[x]}$
 $\frac{x+1}{|x-3|} \geq 0$ $\frac{4-x}{x^2+2x+5} \geq 0$
 $\frac{x+1}{x-3} \geq 0$ $\frac{4-x}{x^2+2x+5} \geq 0$
 $\Delta < 0$ $D_f = (-\infty, 4) \cup (-1, 4) \cup (-\infty, 3)$ $[4, +\infty)$
 $D_f = [-1, 4] \cup \{4\}$ $D_f = \emptyset$

الف) $\sqrt{\frac{x^2 - x - 9}{x^2 - 13x^2 + 39}}$

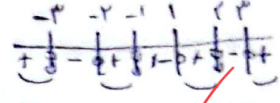
$(x-3)(x+3)$
 $(x^2-9)(x^2-9)$



$D_f = (-\infty, -3) \cup (-3, 3) \cup (3, 9) \cup (9, \infty)$

ب) $y = \sqrt{\frac{x^2 - 2x^2 - 2x + 4}{x^2 + 2x^2 - 2x - 4}}$

$(x-1)(x-2)(x+2)$
 $(x+1)(x+2)(x-2)$



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

الف) $y = \sqrt{-x} - 2$

$[-x] - 2 \geq 0$

$[-x] \geq 2$

$-x \geq 2$

$x \leq -2$

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

ب) $y = \frac{\omega x^2 + 9}{[x]^2 - 2[x] - 3}$

$[x]^2 - 2[x] - 3 > 0$

$([x] - 3)([x] + 1) > 0$

$[x] = 3$

$[x] = -1$

$[x] = -1$

$-1 \leq x < 0$

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

الف) $y = \cot x + 1$
 $\tan x \neq -1$

1) $2k\pi + \frac{\pi}{2} \leq x < 2k\pi + \pi$

2) $2k\pi \leq x < 2k\pi - \frac{\pi}{2}$

$D_f = [2k\pi, 2k\pi + \frac{\pi}{2}) \cup [2k\pi + \frac{\pi}{2}, 2k\pi + \pi)$

$D_f = [\frac{k\pi}{2}, k\pi - \frac{\pi}{2})$



ب) $y = \sqrt{1 - \epsilon \sin^2 x}$

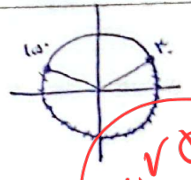
$1 - \epsilon \sin^2 x \geq 0$

$\epsilon \sin^2 x \leq 1$

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

$\sin x \leq \frac{1}{\sqrt{\epsilon}}$

$D_f = [2k\pi + \frac{\pi}{2}, 2k\pi + \pi - \frac{\pi}{2})$



الف) $y = \sqrt{1 - \log \frac{x-1}{\frac{1}{x}}}$

$1 - \log \frac{x-1}{\frac{1}{x}} \geq 0$

$\log \frac{x-1}{\frac{1}{x}} \leq 1 \rightarrow x-1 \leq \frac{1}{x} \Rightarrow x \leq \frac{x}{x-1}$

$D_f = 1 < x \leq \frac{x}{x-1} \quad (1, \frac{x}{x-1}]$

ب) $y = \sqrt{\frac{x^2 - x}{1 - \log \frac{x^2 - 2x}{x^2 - 3x}}}$

$x^2 - 2x > 0$
 $x(x-2) > 0 \rightarrow \mathbb{R} - \{0, 2\}$

$1 - \log \frac{x^2 - 2x}{x^2 - 3x} > 0 \rightarrow \log \frac{x^2 - 2x}{x^2 - 3x} < 1$

$x^2 - 2x < \epsilon \rightarrow x^2 - 2x - \epsilon < 0 \rightarrow (x - \epsilon)(x + 1) < 0$

$D_f = \mathbb{R} - \{0, 2\} \cap \mathbb{R} - \{\epsilon, -1\} = (-\infty, \epsilon) \cup (-1, 2) \cup (2, \infty)$

ب) $y = (\frac{x^2 + \omega}{x^2 + \epsilon})!$

$\frac{x^2 + \omega}{x^2 + \epsilon} \in \mathbb{W} \Rightarrow x \in \frac{\sqrt{\omega + \epsilon}}{\sqrt{\omega + \epsilon}}$

$x \in \frac{-\epsilon + \omega}{\sqrt{\omega - \epsilon}}$

$D_f = \{x \mid x \in \frac{-\epsilon k + \omega}{\sqrt{\omega - \epsilon}}, k \in \mathbb{W}\}$

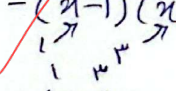
الف) $y = \sqrt{\frac{\epsilon x - x^2}{x^2 - 1}}$

$\frac{\epsilon x - x^2}{x^2 - 1} \geq 0$

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

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

$-(x-1)(x-3) > 0$



$D_f = [1, 3]$

$\sin x, \cos x \neq 0$

