

نام و نام خانوادگی نیمی غفری پاسنامه تشریحی تکلیف شماره ۳ کلاس یازدهم ریاضی ۳

الف) $\frac{x+3}{x^3+x^2-11x+3} = \frac{(x+3)(x-1)}{(x-1)(x-1)(x+3)} \rightarrow (x-1)(x-1)(x+3) \neq 0$
 $D_f, \mathbb{R} - \{1, \frac{1}{x}, -3\} \quad x \neq 1, \frac{1}{x}, -3$

ب) $\frac{x+3}{x^3+9x^2+10x+3} \cdot (x+1) \rightarrow \frac{x+3}{(x+1)(x+1)(x+3)}$
 $(x+3)(x+1)(x+1) \neq 0 \quad x \neq -1, -\frac{1}{x}, -3$
 $D_f, \mathbb{R} - \{-1, -\frac{1}{x}, -3\}$

الف) $\frac{x+3}{(x-1)(x^2-x-1)} \rightarrow (x-1)(x^2-x-1) \neq 0$
 $x \neq 1 \quad D_f, \mathbb{R} - \{1\}$

ب) $\sqrt{\frac{x+3}{x^3-2x^2+x-1}} \geq 0 \rightarrow \frac{x+3}{(x-1)(x^2-x-1)} \geq 0$
 $\frac{-3}{-1} = 3 \quad D_f, (-\infty, -3] \cup (1, +\infty)$

ج) $\frac{2}{x^2-8|x-1|-2x+5} \quad D_f, \mathbb{R} - \{0, -3, 5, 2\}$

$x^2-8|x-1|-2x+5 \neq 0$
 $x < 1 \rightarrow x^2-8x-8-2x+5 \neq 0 \rightarrow x^2-10x-3 \neq 0 \rightarrow x(x+3) \neq 0$
 $x \neq 0, -3$

$x \geq 1 \rightarrow x^2-8x+8-2x+5 \neq 0$
 $x^2-10x+13 \neq 0 \rightarrow (x-2)(x-6) \neq 0$
 $x \neq 2, 6$

$D_f, \mathbb{R} - ([0, 5] \cup [5, 2])$

الف) $[-x]-2 \geq 0 \quad D_f, (-\infty, -2]$

$[-x] \geq 2$

$-x \geq 2$

$x \leq -2$

$[x] \in \mathbb{N}$

ب) $[x]^2-2[x]-5 \neq 0 \rightarrow [x]^2-2[x] \neq 3 \quad (n-3)(n-1) \neq 0$
 $n^2-2n \neq 3 \rightarrow n^2-2n-3 \neq 0 \quad 3, -1 \neq n$

$x \notin [5, 2]$

$x \notin [-1, 0]$

$[x] \neq 3$

$[x] \neq -1$

الف) $[x-\frac{1}{e}] + [x+\frac{1}{e}] \geq 0 \quad [x-\frac{1}{e}] \geq -1 \quad [x+\frac{1}{e}] \geq 1$
 $x+\frac{1}{e} \geq 1 \rightarrow x \geq \frac{1}{e}$
 $D_f, [\frac{1}{e}, +\infty)$

ب) $[x-\frac{1}{e}] + [\frac{1}{x}-x] \geq 0$

$x-\frac{1}{e} \in \mathbb{Z} \rightarrow x \in \mathbb{Z} + \frac{1}{e}$

$D_f, \{x | x = k + \frac{1}{e}, k \in \mathbb{Z}\}$

$$a) \frac{\cos x + 1}{\tan x + 1} \rightarrow \tan x + 1 \neq 0$$

$$\tan x \neq -1$$

$$D: \mathbb{R} - \left\{ k\pi - \frac{\pi}{4} \right\}$$

$$b) 1 - \varepsilon \sin^2 x \geq 0$$

$$1 \geq \varepsilon \sin^2 x$$

$$\frac{1}{\varepsilon} \geq \sin^2 x \rightarrow \frac{1}{\sqrt{\varepsilon}} \geq |\sin x| \geq -\frac{1}{\sqrt{\varepsilon}}$$

$$D: \left[k\pi - \frac{\pi}{6}, k\pi + \frac{\pi}{6} \right]$$

$$a) \sqrt{4 \sin x - 1} \rightarrow 4 \sin x - 1 \geq 0$$

$$4 \sin x \geq 1$$

$$\sin x \geq \frac{1}{4}$$

$$D = \left[k\pi + \frac{\pi}{6}, \frac{\pi}{4} + k\pi \right]$$

$$b) \sqrt{1 - 2 \cos x} \rightarrow 1 - 2 \cos x \geq 0$$

$$1 \geq 2 \cos x \rightarrow \frac{1}{2} \geq \cos x$$

$$D: \left[k\pi + \frac{\pi}{3}, k\pi + \frac{2\pi}{3} \right]$$

$$a) \arcsin(x^2 + 1) \rightarrow -1 \leq x^2 + 1 \leq 1$$

$$x^2 + 1 \leq 1$$

$$\Rightarrow \cos y = \sqrt{1 - x^2}$$

$$1 - x^2 \geq 0, x \leq 1 \rightarrow x \leq \frac{1}{\sqrt{2}}$$

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

$$x^2 + 1 \geq 0$$

$$x^2 + 1 \geq 0$$

$$(x+1)(x-1) \geq 0$$

$$x^2 + 1 \leq 0$$

$$x(x+1) \leq 0$$

$$-1 \leq x \leq 0$$

$$-1 \leq \sqrt{1 - x^2} \leq 1 \rightarrow \sqrt{1 - x^2} \leq 1 \rightarrow 1 - x^2 \leq 1$$

$$-1 \leq \sqrt{1 - x^2} \leq 1 \rightarrow \sqrt{1 - x^2} \geq -1 \rightarrow 1 - x^2 \geq 1$$

$$D: [-1, 1] \cup [1, 1]$$

$$1 - \log x > 0$$

$$1 > \log x$$

$$x > 0$$

$$D: (0, 1)$$

$$b) 1 - \log \frac{x}{1} > 0$$

$$1 > \log \frac{x}{1}$$

$$\left\{ \begin{array}{l} x > 0 \\ x > \frac{1}{e} \end{array} \right\} \rightarrow D: \left(\frac{1}{e}, +\infty \right)$$

$$a) \sqrt{\frac{x - x^2}{x - x^2 - 1}} \rightarrow \frac{x - x^2}{x - x^2 - 1} \geq 0$$

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

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

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

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

$$x^2 - 2x \leq 0$$

$$(x - 2)(x - 0) \leq 0$$

$$\Rightarrow \frac{x - 0}{x - 2} < 0$$

$$\frac{x - 0}{x - 2} < 0 \rightarrow \frac{x - 0}{x - 2} < 0$$

$$D: \left\{ x \mid x \neq \frac{x - 0}{x - 2}, x \in \mathbb{R} \right\}$$

$$D: (1, 2)$$