

تکلیف شماره ۲ :

در بازه (۰، ۱)

معادله کربا سیمان

$$(a-2)x^2 + ax + b \geq 0 \quad \left[\frac{1}{2}, +\infty \right)$$

پس تابع قطعی

$$f(x) = \sqrt{2x+b} \quad \underline{x=1} \quad 4+b=0 \quad \rightarrow \quad \boxed{b=-4}$$

$$x^2 + 2x + 2 - m^2 \Rightarrow \text{معادله درجه دوم} \rightarrow \Delta \leq 0$$

$$2 + 2(m^2 - 2) \leq 0$$

$$2 + 2m^2 - 4 = 2m^2 - 2 \leq 0 \rightarrow m^2 \leq 1$$

$$\boxed{-1 \leq m \leq 1} \leftarrow m^2 \leq 1$$

$$1 - (-1) = \boxed{2}$$

$$f(x) = \frac{\sqrt{2-x^2}}{[x] + [x] + 1} \quad 2-x^2 \geq 0$$

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

$$x \in \mathbb{Z} \quad \text{و } x \neq -1$$

$$x = \{-1, -1, 0, 1, 1\} \rightarrow \underline{\underline{5}}$$

ب) $x^2 + 2x^2 \geq 0 \rightarrow x^2(x+2) \geq 0$

$$\begin{array}{r} -2 \quad 0 \quad 2 \\ -1 \quad + \quad 1 \quad + \\ 0 \quad 0 \quad + \end{array}$$

$$D_f = [-2, +\infty)$$

$$c) \frac{(x+1)(x-1) \times x^2 (x-3)}{(x-1)(x^2+1+x)}$$

$$Df = [-1, 0] \cup [3, +\infty)$$

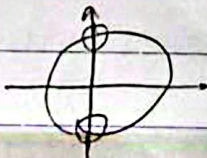
د) $|x-2| > 3 \rightarrow x-2 > 3 \rightarrow x > 5$
 $x-2 < -3 \rightarrow x < -1$
 $Df = (-\infty, -1] \cup [5, +\infty)$

ج) $5 - |2-x| > 0 \rightarrow |2-x| < 5 \rightarrow -5 < 2-x < 5$
 $-7 < x < 7$
 $Df = [-7, 7]$

ا) $1 - x|x| > 0 \rightarrow x|x| < 1$
 $x > 0 \rightarrow x^2 < 1 \rightarrow x < 1$
 $x < 0 \rightarrow x^2 > -1$
 $Df = [-1, 1]$

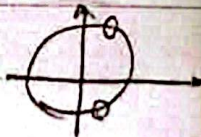
د) $2 - |x-4| - 1 > 0$
 $|x-4| < 1 \rightarrow -1 < x-4 < 1$
 $3 < x < 5$
 $Df = (3, 5)$

ب) $y = \frac{\sin^2 x - 1}{\cos x} \quad \cos x \neq 0$



$Df = \mathbb{R} - \left\{ k\pi + \frac{\pi}{2} \right\}$

ج) $2 \cos x \neq 1 \rightarrow \cos x \neq \frac{1}{2}$



$Df = \mathbb{R} - \left\{ k\pi \pm \frac{\pi}{3} \right\}$

sam

$$a) |2x+1| \neq |x+3|$$

-1

$$5x^2+1+2x \neq x^2+9+4x$$

$$4x^2-3x-8 \neq 0 \rightarrow x^2-\frac{3}{4}x-\frac{2}{1} \neq 0$$

$$\frac{(x-\frac{3}{4})(x+\frac{8}{3})}{\frac{4}{3} \quad \frac{1}{3}} \neq 0$$

$$D_L = R_L = \left\{ -\frac{3}{4}, 2 \right\}$$

$$b) |2x+1| \geq |x+3|$$

$$5x^2+1+2x \geq x^2+9+4x$$

$$4x^2-3x-8 \geq 0 \rightarrow x^2-\frac{3}{4}x-\frac{2}{1} \geq 0$$

$$\frac{\frac{3}{4}}{4} \quad \frac{2}{1} \quad \frac{1}{3}$$

$$D_F = \left(-\infty, -\frac{3}{4} \right] \cup \left[2, +\infty \right)$$

$$2x-1 > 0 \rightarrow 2x > 1 \rightarrow x > \frac{1}{2} \quad (I)$$

-9

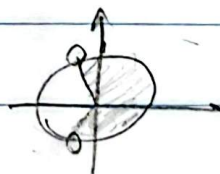
$$\log_a (2x-1) > 0 \rightarrow (2x-1) > 1 \rightarrow 2x > 2 \rightarrow x > 1 \quad (II)$$

$$\log_a \log_a (2x-1) > 0 \rightarrow \log_a (2x-1) > 1 \rightarrow 2x-1 > a \rightarrow 2x > a+1 \rightarrow x > \frac{a+1}{2}$$

$$(I) \cap (II) \cap (III) = \left(1, \frac{a+1}{2} \right]$$

$$c) 2 \cos x + 1 > 0$$

$$\cos x > -\frac{1}{2}$$



-10

$$D_C = R_C = \left[k\pi + \frac{\pi}{3}, k\pi + \frac{2\pi}{3} \right]$$

$$d) \frac{x-1}{x+1} > 0 \rightarrow \log \frac{x-1}{x+1} > 0 \rightarrow \frac{x-1}{x+1} > 1$$

$$(I) \left(x < -1 \quad x > 1 \right)$$

$$\frac{x-1}{x+1} > 1 \rightarrow \frac{x-1}{x+1} - 1 > 0 \rightarrow \frac{x-1-x-1}{x+1} > 0 \rightarrow \frac{-2}{x+1} > 0$$

مکمل نیست و مثبت منفی نیست

$$(II) \quad x < -1 \leftarrow x+1 < 0 \quad \leftarrow$$

$$(I) \cap (II) = (-\infty, -1)$$