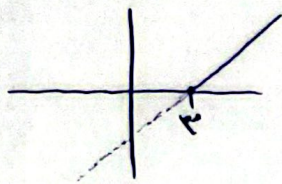


تکلیف 4

مسئله 1

پارامتر B

1. $f(x) = \sqrt{(a-x)x^2 + bx + c}$ $[2, +\infty)$ ۲. افزایشی فونکشن (۱)



$a-x=0 \Rightarrow a=2$

$\sqrt{2x+b} \quad \sqrt{x^2+b} \rightarrow b=-4$ (۲)

2. $f(x) = \sqrt{x^2 + 2x + 2 - m^2}$ $\Delta = b^2 - 4ac = 4 - 4(1+m^2) = -4 + 4m^2 \leq 0$ (۲)

$\Delta \leq 0, \min, b$ ~~$m^2 \leq 1$~~ ~~$-1 \leq m \leq 1$~~

$m^2 \leq 1 \quad m^2 \leq 1 \quad -1 \leq m \leq 1 \quad 1 - (-1) \in \mathbb{R}$ (۲)

3. $f(x) = \frac{\sqrt{4-x^2}}{[x]+[-x]+1} = \frac{\sqrt{(2-x)(2+x)}}{[x]+[-x]+1} \rightarrow +2 \Rightarrow \frac{-2}{-1+1} \rightarrow \frac{-2}{0}$ (۳)

دامنه = $\mathbb{Z} \cap D_f = \mathbb{Z} \cap [-2, 2] = \{-2, -1, 0, 1, 2\}$ (۲)

4. الف $y = \sqrt{x^2 + 2x^2} \quad x^2 + 2x^2 \geq 0 \quad x^2(x+2) \geq 0 \Rightarrow x \geq -2$ $\frac{-2}{-1+1} \rightarrow \frac{-2}{0}$
 $\Rightarrow D_f = [-2, +\infty)$ (۴)

ب. $y = \frac{\sqrt{(x^2-1)(x^2-5x^2)}}{x^2-1} \quad x^2-1 \neq 0 \rightarrow x \neq \pm 1 \quad (x^2-5x^2) = (x^2)(x-5)$
 $(x^2-1) = (x+1)(x-1) \rightarrow \frac{-1}{+1-1} \rightarrow \frac{-1}{0}$ (۲)

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

ج. الف $y = \sqrt{|x-2|-2} \quad |x-2|-2 \geq 0 \quad |x-2| \geq 2 \Rightarrow x-2 \geq 2 \text{ or } x-2 \leq -2$
 $x \geq 4 \text{ or } x \leq 0 \quad D_f = \mathbb{R} - (-1, 1)$ (۵)

ب. $y = \sqrt{4-|x-2|} \quad 4-|x-2| \geq 0 \quad 4 \geq |x-2| \Rightarrow -2 \leq x-2 \leq 2$

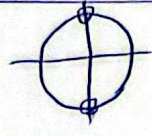
$2 \geq -x \geq -4 \quad -2 \leq x \leq 4$
 $\Rightarrow D_f = [-2, 4]$ (۲)

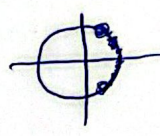
الف) $y = \sqrt{1-x|x|}$ $1-x|x| \geq 0$ $1 \geq x|x|$ $\frac{1}{+} \frac{1}{-}$.(4)

$DF = (-\infty, 1]$

ب) $y = \frac{1}{\sqrt{1-x|x|}}$ $\sqrt{1-x|x|} \geq 0$ $1-x|x| \geq 0$ $x \geq |x-1| \geq -x$
 $x \geq x-1 \geq -x$ $1 \geq x \geq -1$

$\sqrt{1-x|x|} \neq 1$ $1-x|x| \neq 1$ $x \neq |x-1|$ $x-1 \neq \pm x$ $x \neq 1, 0$
 $DF = [1, \infty) \cup (-1, 0)$

ج) $y = \frac{\sin^2 x - 1}{\cos x}$ $\cos x \neq 0$  .(4)

$y = \frac{\cos x}{1 - \cos x}$ $1 - \cos x \neq 0$ $\cos x \neq 1$ 
 $DF = \mathbb{R} - \{2k\pi + \frac{\pi}{2}, 2k\pi + \frac{3\pi}{2}\}$

د) $y = \frac{x+5}{|x+1| - |x+5|}$ $|x+1| - |x+5| \neq 0$ $|x+1| \neq |x+5|$ $x^2 + 2x + 1 \neq x^2 + 10x + 25$
 $x^2 - 8x - 24 \neq 0$ $x^2 - 8x - 24 \neq 0$ $(x-4)(x+6) < 0$ $x = -\frac{5}{2}$
 $x = \frac{5}{2}$
 $\Rightarrow DF = \mathbb{R} - \{-\frac{5}{2}, \frac{5}{2}\}$

هـ) $y = \sqrt{|x+1| - |x+5|}$ $|x+1| - |x+5| \geq 0$ 
 $\frac{-\frac{5}{2}}{+} \frac{5}{-}$ $DF = \mathbb{R} - (-\frac{5}{2}, \frac{5}{2})$

و) $f(x) = \sqrt{\log_{\frac{1}{2}} \log_{\frac{1}{2}} (x-1)}$ $\log_{\frac{1}{2}} \log_{\frac{1}{2}} (x-1) \geq 0$ $x-1 > 0$ $x > 1$  .(4)
 $x-1 \geq 1$ $x \geq 2$ $\log_{\frac{1}{2}} \log_{\frac{1}{2}} (x-1) \geq 0, 2 \rightarrow x-1 \leq 2$ $x \leq 3$
 $DF = [2, 3]$

ز) $y = \log(\cos x + 1)$ $\cos x + 1 > 0$ $\cos x > -1$ $\cos x > -\frac{1}{2}$ 
 $DF = \mathbb{R} - [2k\pi + \frac{3\pi}{2}, 2k\pi + \frac{5\pi}{2}]$ 

ح) $y = \sqrt{\log_{\frac{x-1}{x+1}}}$ $\log_{\frac{x-1}{x+1}} \geq 0$ $\frac{x-1}{x+1} \geq 1 \rightarrow \frac{x-1-x-1}{x+1} \geq 0$ $\frac{-1}{+} \frac{-1}{-}$
 $x < -1$ $\frac{x-1}{x+1} > 0 \rightarrow \frac{1}{+} \frac{1}{-} \frac{1}{+}$ $(-\infty, -1) \cap ((-\infty, -1) \cup [1, \infty)) = (-\infty, -1)$