

۱۹/۲۵
آفرین

نام و نام خانوادگی: پاسخنامه تشریحی تکلیف شماره کلاس: ۱۲۰۵۰۱

$$f(x) = \sqrt{(x-2)x^2 + ax + b} \quad [2, +\infty)$$

$$f(x) = \sqrt{2x + b} \quad x=2 \quad a+b=0$$

$$\Rightarrow b = -4 \quad \textcircled{2}$$

$$\begin{array}{c} +1 \quad -1 \quad + \\ -1 \quad +1 \quad - \\ +1 \quad -1 \quad + \\ -1 \quad +1 \quad - \end{array}$$

تعیین می‌کنیم که تابع در چه بازه‌ای از x معنی دارد
است. زیرا که در $x=2$ مقدار $f(x)$ را می‌خواهیم
برویم. پس در $x=2$ باید $f(x)$ معنی داشته باشد
 $\Rightarrow (x-2)=0 \Rightarrow x=2$

$$f(x) = \sqrt{x^2 + 2x + 1 - m^2} \Rightarrow D_f = \mathbb{R} \quad \Delta \leq 0$$

$$x - x(x - m^2) = 0 \Rightarrow x m^2 - x = 0 \Rightarrow m = \pm 1$$

$$x - x(x - m^2) < 0 \Rightarrow \frac{-1 \quad +1}{+1 \quad -1 \quad +} \Rightarrow m \in [-1, +1]$$

$$\Rightarrow m_{\max} = +1, m_{\min} = -1 \Rightarrow 1 \leq m \leq 1 \quad \textcircled{2}$$

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

$$[x] + [-x] + 1 \neq 0 \Rightarrow [x] + [-x] = -1 \Rightarrow x \in \mathbb{Z}$$

$$\Rightarrow D_f = \{x \mid x \in \mathbb{Z}, x \in [0, 1]\} \Rightarrow x = 0 \quad \textcircled{2}$$

$$\text{الف) } y = \sqrt{x^2 + x} \Rightarrow y = |x| \sqrt{x+1} \Rightarrow x+1 \geq 0 \Rightarrow x \geq -1$$

$$\Rightarrow D_f = [-1, +\infty)$$

$$\text{ب) } y = \sqrt{\frac{(x^2-1)(x^2-2x^2)}{x^2-1}}$$

$$x^2-1=0 \Rightarrow x=1$$

$$x^2-1=0 \Rightarrow x=\pm 1$$

$$\frac{-1 \quad 1}{+1 \quad -1 \quad +}$$

$$x^2-2x^2=0 \Rightarrow x=0, x=2$$

$$\Rightarrow D_f = (-\infty, -1] \cup [2, +\infty) \cup \{0\}$$

$$\text{الف) } y = \sqrt{|x+2| - x} \Rightarrow |x+2| - x = 0 \Rightarrow x = -1, x = +2$$

$$\Rightarrow \frac{-1 \quad 2}{+1 \quad -1 \quad +} \Rightarrow D_f = \mathbb{R} - (-1, 2) \quad \textcircled{2}$$

$$\text{ب) } y = \sqrt{x - |x-2|} \Rightarrow x - |x-2| = 0 \Rightarrow x = -2, x = +2$$

$$\Rightarrow \frac{-2 \quad 2}{-1 \quad +1 \quad -} \Rightarrow D_f = [-2, 2] \quad \textcircled{2}$$

الف) $y = \sqrt{1-x|x|}$ $1-x|x| = 0 \Rightarrow x=1$

$\Rightarrow \frac{1}{1-x} = \frac{1}{1-x} \Rightarrow D_f = (-\infty, 1]$

1/25

ب) $y = \sqrt{x-\ln|x-1|}$ $x-\ln|x-1| \geq 0$
 $\Rightarrow \frac{x}{x-1} \geq 1 \Rightarrow D_f = (1, \infty)$

ج) $y = \frac{\sin^2 x - 1}{\cos x}$ $\cos x \neq 0 \Rightarrow D_f = \mathbb{R} - \{x | x = \frac{\pi}{2} + k\pi\}$

د) $y = \frac{\cos x}{x \cos x - 1}$ $x \cos x - 1 \neq 0 \Rightarrow \cos x \neq \frac{1}{x}$

$\Rightarrow D_f = \mathbb{R} - \{x | x = \frac{1}{\cos x}\}$

ه) $y = \frac{x+c}{|x+c| - |x-c|}$ $|x+c| - |x-c| \neq 0 \Rightarrow |x+c| \neq |x-c|$
 $\Rightarrow (x+c)^2 \neq (x-c)^2 \Rightarrow x^2 + 2cx + c^2 \neq x^2 - 2cx + c^2 \Rightarrow 4cx \neq 0 \Rightarrow x \neq 0$
 $\Rightarrow D_f = \mathbb{R} - \{0\}$

و) $f(x) = \sqrt{\log \log_a(xn-1)}$ $xn-1 > 0 \Rightarrow x > \frac{1}{n}$

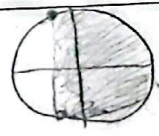
II: $\log_a(xn-1) > 0 \Rightarrow xn-1 > 1 \Rightarrow x > \frac{2}{n}$

III: $\log \log_a(xn-1) \geq 0 \Rightarrow \log_a(xn-1) \leq 1 \Rightarrow xn-1 \leq a \Rightarrow x \leq \frac{a+1}{n}$

$\Rightarrow D_f = I \cap II \cap III = (\frac{2}{n}, \frac{a+1}{n}]$

ز) $y = \log(x \cos x + 1)$ $x \cos x + 1 > 0 \Rightarrow \cos x > -\frac{1}{x}$

$D_f = \mathbb{R} - [x | x = -\frac{1}{\cos x}]$



ح) $y = \sqrt{\log \frac{x-1}{x+1}}$ $\frac{x-1}{x+1} > 0 \Rightarrow \frac{-1}{x+1} \geq 0 \Rightarrow x \leq -1$

$\Rightarrow \frac{x-1}{x+1} \geq 1 \Rightarrow \frac{x-1}{x+1} - 1 \geq 0 \Rightarrow \frac{-2}{x+1} \geq 0 \Rightarrow x \leq -1$

$$4- \text{ب) } 3 - |n-2| \geq 0 \rightarrow |n-2| \leq 3 \rightarrow -3 \leq n-2 \leq 3 \rightarrow 2 \leq n \leq 5$$

$$\sqrt{3 - |n-2|} - 1 \neq 0 \rightarrow \sqrt{3 - |n-2|} \neq 1 \rightarrow 3 - |n-2| \neq 2 \rightarrow |n-2| \neq 2 \rightarrow n \neq 4, 0$$

$$D_f = [2, 5] - \{0, 4\} = [2, 3) \cup (3, 4) \cup (4, 5]$$