

۲. آخرین عالی نور ۱۳۹۷

$$\sqrt{(a-2)x^2+ax+b} \rightarrow \sqrt{2x+b} \rightarrow x=0 \rightarrow \sqrt{9+b}=0$$

$a=2$ باید ۱ باشد

$b=-9$

$$\sqrt{x^2+2x+2-m^2} \rightarrow \Delta \leq 0 \rightarrow 2 - \varepsilon - \varepsilon(2-m^2) \leq 0$$

$$\rightarrow 2-m^2 \geq 1 \rightarrow m^2 \leq 1 \rightarrow -1 \leq m \leq 1$$

$\hookrightarrow 1 - (-1) = 2$

$$\varepsilon - x^2 \geq 0 \rightarrow 1 \leq x \leq 2$$

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

$x = \{-2, -1, 0, 1, 2\}$

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$$\sqrt{x^2+2x^2} \rightarrow \frac{-2 \pm \sqrt{4+8}}{2} \rightarrow D_f = [-1, \infty)$$

ب) $\sqrt{\frac{(x^2-1)(x^2-4x^2)+0}{x^2-1}} \rightarrow \frac{-1 \pm \sqrt{1+4}}{1} \rightarrow D_f = (-\infty, -1] \cup [1, \infty) \cup \{0\}$

$$|x-2| \geq 0 \rightarrow \begin{cases} x \geq 2 \\ x \leq -1 \end{cases} \rightarrow D_f = (-\infty, -1] \cup [2, \infty)$$

$$|2-x| \leq \varepsilon \rightarrow -\varepsilon \leq 2-x \leq \varepsilon$$

$$-9 \leq -x \leq 2 \rightarrow +9 \geq x \geq -2$$

$$\rightarrow D_f = [-2, 9]$$

الف) $u \leq 1 \rightarrow \begin{cases} u \geq 0 \rightarrow u^2 \leq 1 \sim 0 \leq u \leq 1 \\ u < 0 \rightarrow -u^2 \leq 1 \checkmark \text{ always} \end{cases} \xrightarrow{U} D_f = (-\infty, 1]$	
ب) $\frac{1}{\sqrt{3- u-5 }-1} \rightarrow \sqrt{3- u-5 } \neq 1 \sim u-5 \neq 2 \rightarrow u \neq 3, 7$ $u-5 \leq c \rightarrow -c \leq u-5 \leq c \rightarrow 2 \leq u \leq 8 \xrightarrow{(7)} D_f = [2, 8] - \{3, 7\}$	6
الف) $\cos u \neq 0 \rightarrow D_f = \mathbb{R} - \{k\pi + \frac{\pi}{2}\}$	
ب) $\cos u \neq \frac{1}{2} \rightarrow D_f = \mathbb{R} - \{2k\pi \pm \frac{\pi}{3}\}$ 	7
الف) $2u+1 \neq u+2 \xrightarrow{\text{square}} 4u^2 + 4u + 1 \neq u^2 + 4u + 4 \rightarrow 3u^2 - u - 3 \neq 0 \rightarrow u \neq \frac{1 \pm \sqrt{13}}{6}$ ب) $2u+1 > u+2 \rightarrow 4u^2 + 4u + 1 > u^2 + 4u + 4 \rightarrow 3u^2 - 3 > 0 \rightarrow u < -1 \text{ or } u > 1 \xrightarrow{\frac{-3}{3} = -1} D_f = (-\infty, -1) \cup (1, \infty)$	8
$\Rightarrow \begin{cases} \log_{\frac{1}{5}} \frac{u-1}{5} \leq 1 \rightarrow \frac{u-1}{5} \leq 5 \rightarrow u \leq 26 \\ \log_{\frac{1}{5}} \frac{u-1}{5} > 0 \rightarrow \frac{u-1}{5} > 1 \rightarrow u > 6 \end{cases} \rightarrow D_f = (6, 26]$	9
الف) $\lg(\sqrt{\cos u + 1}) \rightarrow \sqrt{\cos u + 1} > 0 \rightarrow \cos u > -1 \rightarrow D_f = \mathbb{R} - (2k\pi - \frac{\pi}{2}, 2k\pi + \frac{\pi}{2})$ ب) $\sqrt{\lg \frac{u-1}{u+1}} \sim \frac{-1}{+1-1+} \rightarrow \lg \frac{u-1}{u+1} \geq 0 \rightarrow \frac{u-1}{u+1} \geq 1 \rightarrow \frac{-2}{u+1} \geq 0 \rightarrow u < -1 \xrightarrow{\frac{-1}{+1-1+}} D_f = (-\infty, -1)$	10