

الف) ۱) $f(x) = \sqrt{\frac{n-1}{n} - \frac{n}{n-1}}$ $\rightarrow \textcircled{1} n \neq \{0, 1\}$

۲) $\frac{n^2 + 1 - 2n - n^2}{n(n-1)} > 0 \rightarrow \frac{1-2n}{n(n-1)} > 0 \rightarrow \frac{1}{+} \frac{-}{+} \frac{1}{-}$

$\rightarrow \text{Def: } (-\infty, 0) \cup [1, +\infty)$ (پنج)

۱) $f(x) = \frac{\frac{1}{n+1} - \frac{2}{n}}{\frac{2}{n+1} + \frac{1}{n+2}}$ $\rightarrow \textcircled{1} n \neq \{-2, -1, 0, 1\}$

۲) $cn + 4 + n - 1 \neq 0 \rightarrow \varepsilon n + 3 \neq 0 \rightarrow n \neq -\frac{3}{\varepsilon}$

$\rightarrow \text{Def: } \mathbb{R} - \left\{-2, -\frac{3}{\varepsilon}, -1, 0, 1\right\}$ (پنج) ۲

الف) ۲) $f(x) = \sqrt{\left(\left(\frac{1}{2}\right)^n - 1\right)(2 - \varepsilon^n)}$ $\rightarrow \frac{-1}{+} \frac{+}{+}$

$\rightarrow \text{Def: } (-\infty, -1] \cup [2, +\infty)$ (پنج)

$\text{Def: } [1, 12]$

۱) $\sqrt{n-1} + \sqrt{4+1} = c \rightarrow n-1 > 0 \rightarrow n$

$\rightarrow c - \sqrt{n-1} = \sqrt{4+1} \rightarrow c - \sqrt{n-1} > 0 \rightarrow 11 > n-1 \rightarrow 12 > n$ (پنج)

۳) $f(x) = \frac{\log_{\varepsilon}^{(n^2-n-2)}}{\sqrt{n^2-1} + 1}$ $\rightarrow \textcircled{1} n^2-1 > 0 \rightarrow n > 1$

۲) $n^2 - n - 2 > 0 \rightarrow (n-2)(n+1) > 0 \rightarrow \begin{matrix} n < -1 \\ n > 2 \end{matrix}$

$\rightarrow \text{Def: } (-\infty, -1) \cup (2, +\infty)$ (پنج)

H) $f(n) \geq n \xrightarrow{n \geq 1} \textcircled{1} c n - r \geq n \rightarrow r n \geq r \rightarrow \underline{n \geq 1} \checkmark$
 $\xrightarrow{n \geq 1} \textcircled{r} r n + c \geq n \rightarrow n \geq -c \rightarrow \underline{n \geq -c} \checkmark$
 $\rightarrow \text{Df: } [-c, +\infty) \checkmark \textcircled{D}$

$$v) \quad f(f(x)) = x \rightarrow \frac{f(x)+1}{f(x)-1} = x \rightarrow -\frac{-x-1}{+x-1} = \frac{x+1}{x-1} = f(x)$$

$$1) f(t) = -2 \rightarrow t^2 - 2t + 2 = 0 \rightarrow t = 1 \rightarrow \text{glow: } 1$$

$$\rightarrow \sqrt{a^2 - 1} \text{ or } a^2 - 1 = 2 \rightarrow \boxed{a = \pm \sqrt{3}}$$

2) $f(n, r) = (n-r)(n-r) \rightarrow f(n) = (n-4)(n-8)$
 $f(r) = h(r) = (-r)l(-r) = \dots$

$$10) \quad 2 \cos^2 \pi + j \cos \pi = c_1 \delta \rightarrow 1 \cos^2 \pi + 10 \cos \pi - 1 = 0$$

$$\rightarrow \cos^2 \pi + 10 \cos \pi - 1 = 0 \rightarrow (\cos - 1)(\cos + 11) = 0$$

$$\rightarrow \cos \pi \rightarrow \frac{\epsilon}{\lambda} = \frac{1}{5} \checkmark \rightarrow \tan \pi = \pm \sqrt{\epsilon}$$

$$\rightarrow \boxed{\tan \pi = \pm \sqrt{\epsilon}} \quad \text{with } \epsilon = \frac{1}{5} \text{ and } \frac{1}{5} \text{ circled in pink}$$