

① $y_{r+1}^r = r_n + r_n^r$
 $x_1 = n^r \Rightarrow y_{r+1}^r = y_r^r + 1 \Rightarrow y_{r+1}^r - y_r^r = 0 \rightarrow y_r = y_r$ تابعیت

② $x \cos y = y \cos x$ تابعیت

③ $\frac{x+y}{r} = \sqrt{xy} \rightarrow x+y = \sqrt{xy} \rightarrow (\sqrt{x}-\sqrt{y})^2 = 0$ تابعیت

④ $xy^r + rn - y^r - ry = 0$
 $y^r(x-y) + r(x-y) = 0$
 $(x-y)(y^r + r) = 0 \Rightarrow x = y$ تابعیت

⑤ $f(n) = \begin{cases} rn^r - b & : x-1 \geq r \rightarrow n \geq r \\ a + rn & : -r \leq n \leq -1 \end{cases}$
 $x \leq -1 \Rightarrow rn^r - b = a + rn$
 $rn^r - rn = a + b \xrightarrow{f(-1)} \boxed{r+r=r}$

⑥ $P_f = [b \ a] \quad f(n) = \sqrt{a - bn - n^r} \Rightarrow \sqrt{-(x-a)(x-b)} = \sqrt{-(n^r - (a+b)n + ab)}$
 $= \sqrt{-n^r + (a+b)n - ab} = \sqrt{a - bn - n^r} \Rightarrow -n^r + (a+b)n - ab = -n^r - bn + a$
 $\underline{b = -1} \rightarrow a + b = -b \Rightarrow a = -2b \rightarrow \underline{a = 2} \quad \boxed{a+b=1}$

⑦ $\text{if } P_f = (-\infty \ r) \rightarrow \sqrt{-x+r} = y \rightarrow ax^r + bx + c = -x + r$
 $\rightarrow a=0 \quad b=-1 \quad c=r \quad f(0) + r - 31 - 11 \quad \boxed{=-1}$

⑧ $\text{if } \sqrt{\frac{1}{|x| - [n]}} = f(n)$ تابعیت
 $\rightarrow P_f = \mathbb{R} - \mathbb{N}$

⑨ $\sqrt{x} + \sqrt{y} = g$ $\xrightarrow{x \geq 0, y_{\min}, x=0} y = 1 \xrightarrow{y_{\min}} x = 1$
 $\rightarrow P_f = [0, 1]$

④ $f(n) = \sqrt{\log \frac{r^{n-1}}{n}}$
الف

① $r^{n-1} > 0 \quad r^n > 1 \quad n > \frac{1}{r}$

② $n > 0 \quad n > 0$

③ $n \neq 1 \quad n \neq 1$

④ $\log \frac{r^{n-1}}{n} > 0 \quad r^{n-1} > 1 \quad r^n > r \quad n > \frac{r}{r}$

استنتاج $\rightarrow D_f = \left(\frac{r}{r} + \infty\right) - \{1\}$

⑤ ب $f(n) = \log \frac{1}{t + \sqrt{|n| + |n|}} \quad \frac{1}{t + \sqrt{|n| + |n|}} > 0 \rightarrow t + \sqrt{|n| + |n|} > 0$

$\frac{t + \sqrt{|n| + |n|}}{t + \sqrt{|n| + |n|}} > 0 \quad t + \sqrt{|n| + |n|} > 0 \quad (t - r)(t + r) < 0 \quad \frac{-r}{t - r} +$

$\rightarrow \frac{-r < \sqrt{|n| + |n|} < r}{\text{راسم}} \rightarrow \frac{-r < |x| < r}{\text{راسم}} \rightarrow |x| < r$

$\rightarrow -r < x < r \rightarrow D_f = (-r, r)$

⑥ $y = \sqrt{\frac{r^{n+r}}{n+b}} + a \quad (r, +\infty) \rightarrow \frac{r^{n+r+a} + ab}{n+b} > 0 \rightarrow \frac{(r+a)^n + r + ab}{n+b} > 0$
 $r+a = 0 \rightarrow a = -r \rightarrow \frac{r - rb}{n+b} > 0 \rightarrow \frac{r(1-b)}{n+b} > 0 \rightarrow \frac{r(1-b)}{n-r} > 0 \rightarrow b = -r$

⑦ $y = \sqrt{f(n) - n + 1}$
 $r^{n-1} : [n] > r \rightarrow \Delta \leq n$
 $t + n + r : [n] \leq r \rightarrow n \leq \Delta$

$\rightarrow \Delta \leq n \rightarrow \sqrt{r^{n-1} - n + 1} \geq 0 \rightarrow r^{n-1} \geq n \rightarrow \Delta \leq n$

$n \leq \Delta \rightarrow \sqrt{t + n + r - n + 1} \geq 0 \rightarrow t + n + r \geq 0 \rightarrow x \geq -\frac{r}{r} \rightarrow -\frac{r}{r} \leq x \leq \Delta$

① U ② $\rightarrow -\frac{r}{r} \leq x \rightarrow D_f = \left[-\frac{r}{r}, +\infty\right)$

⑧ $\frac{r(\Delta n^r + 1) + 4n + r}{(r^{n+1})^r} = \frac{r(r^{n+1})}{(r^{n+1})^r} \xrightarrow{n \neq \frac{1}{r}} r(r^{n+1}) = y$

$\rightarrow D_f = \mathbb{R} - \left\{-\frac{1}{r}\right\}$

$$\textcircled{10} y = \sqrt{1 - \log(rn - a)} \xrightarrow{(b) \text{ c3}} c - b = ?$$

$$\textcircled{1} rn - a > 0 \quad rn > a \quad n > \frac{a}{r}$$

$$\textcircled{2} 1 - \log_{10}^{rn-a} \geq 0 \rightarrow 1 \geq \log_{10}^{rn-a} \rightarrow \log_{10}^{10} > \log^{rn-a}$$

$$\rightarrow rn - a \leq 10 \quad rn \leq 10 + a \rightarrow n < \frac{10 + a}{r}$$

$$\frac{a}{r} < n < \frac{10+a}{r} \rightarrow c - b = \frac{10+a}{r} - \frac{a}{r} = \frac{10}{r} = \textcircled{a}$$

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 b c