

①

$$y_n^m = a, y_{mn}^{mr} = b, a > 0$$

$$\frac{y_n^m}{y_n} = a \rightarrow y^m = a \cdot y^n$$

$$\frac{y_{mn}^{mr}}{y_{mn}} = \frac{r y^m + y^n}{y^m + y^n} = \frac{r a y^n + y^n}{a y^n + y^n} \rightarrow b = \frac{r a + 1}{a + 1}$$

$$0 < \frac{a}{a+1} < 1 \rightarrow 1 < b < \boxed{[b] = 1}$$

②

$$y = \sqrt{\frac{u}{y^n + 1}}$$

I) $u > 0$
II) $y^n \rightarrow \infty \rightarrow u \neq$

$$\text{III} = \frac{u}{y^n + 1} > 0$$

$$I \cap \text{II} \cap \text{III} = \boxed{[0, 1]}$$

③

$$y = \frac{y^r (u^r - u + 1)}{\sqrt{u^r - 1} + 1}$$

$$I \cap \text{II} : (-\infty, -1) \cup (1, +\infty)$$

I: $u^r - 1 > 0 \rightarrow |u| > 1 \rightarrow u \in (-\infty, -1] \cup [1, +\infty)$
II: $u^r - u - 1 > 0 \rightarrow u = -1/r$

$$u \in (-\infty, -1) \cup (1, +\infty)$$

④

$$r y_u^a + y_a^r = r \xrightarrow{u=a} r y_{ra}^a + y_a^r = r \rightarrow \frac{r}{r} y_a^a + \frac{1}{\frac{1}{r}} y_a^r = r \rightarrow 1 = 1 \rightarrow \underline{a=r}$$

⑤

$$y^r = -1/r, y^r = 1/\varepsilon, (y^{\frac{\omega}{r}})^r + y^a - y^{1a} = 0$$

$$(y^{\omega} - y^r)^r + r y_u^r - (y^r + y^a) \Rightarrow \frac{1}{r} u^r + \frac{1}{1} u + \frac{1}{1} = 0$$

$$\frac{u^r}{r} = \frac{-1/r}{\frac{1}{r}} \rightarrow \frac{u^r}{r} = -1 \rightarrow u = -1$$

⑥

$$y_r^r = 1/r, y_{\omega}^r = 1/\omega, y_{1\varepsilon}^{1\omega} = \frac{1}{\varepsilon}$$

$$\frac{y_{1\varepsilon}^{1\omega}}{y_{1\varepsilon}^{1\omega}} \Rightarrow \frac{y_r^r + y_{1\varepsilon}^r}{y_{1\varepsilon}^{\omega} + y_r^r} \Rightarrow \frac{1/r + 1}{1/\omega + 1/r} \rightarrow \frac{1/r + 1}{1/\omega + 1/r} \rightarrow \frac{1}{\omega}$$

$$y_{1\varepsilon}^{1\omega} = \frac{1}{\omega}$$

⑦

$$\begin{array}{r} 44 \\ 44 \\ \hline 88 \end{array}$$

$$\frac{1K}{Y_0}$$

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