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$$\left(\frac{r}{a}\right)^{n^r} = (r/a)^{r^{n-1}} \Rightarrow \left(\frac{r}{a}\right)^{-r^{n^r}} = \left(\frac{r}{a}\right)^{r^{n-1}} \Rightarrow -r^{n^r} = r^{n-1} \Rightarrow +r^{n^r} + r^{n-1} = 0$$

$$\left(\frac{a}{r}\right)^{n^r} = \left(\frac{r}{a}\right)^{-r^{n^r}}$$

$n^r = -1 \Rightarrow 9 \times 10^8 + 1 = -1 \text{ GG}$
 $n^r = \frac{1}{r} \Rightarrow 9 \times 10^8 + 1 = \frac{1}{r} \text{ GG}$
 $\neq$

$$\log_a(n+1) \Rightarrow a^{n+1} > 0 \Rightarrow n < \frac{1}{GG}, \quad n > -1 \Rightarrow \log_a^r = \left(\frac{r}{a}\right)$$

$$\log_a^b \leq \frac{r}{a}(1+a) \Rightarrow \log_a^b \leq \frac{r}{a} (\underbrace{\log_r^r + \log_r^r}_{\log_r^r}) \Rightarrow \log_a^b \leq \log_a^r \Rightarrow \boxed{b < r}$$

$$\log(r^{b-1}) \leq \log \frac{1}{r} \Rightarrow \boxed{r}$$

$$a+b \leq s = \frac{b}{ra} + \frac{b}{ra} \xrightarrow{\text{multi}} \frac{sa}{b} \leq \log^r \Rightarrow \frac{a}{b} \leq \frac{1}{r} \log^r \Rightarrow \frac{a}{b} \leq \frac{1}{r} \log^r \Rightarrow a \leq \frac{b}{r} \log^r$$

$$a+c \leq a \Rightarrow c \leq a-b \Rightarrow c \leq b \log^r - b$$

$$c \leq b(\log^r - 1) \Rightarrow c \leq -b(\frac{1}{\log^r} - \log^r) \Rightarrow c \leq -b(1 + \log^d)$$

$$\frac{c}{a} \leq \frac{-b \log^d}{\frac{b}{r} \log^r} = -r \log^d \Rightarrow \left(\frac{1}{\sqrt[r]{r}}\right)^{\frac{c}{a}} = \left(r^{-\frac{1}{r}}\right)^{\frac{c}{a} - r \log^d} = \left(r^{-\frac{1}{r}}\right)^{\log^d} \Rightarrow \boxed{\log^d \leq \frac{r}{a}}$$