

$$\log_a \log_r^c = \left[\frac{1}{r} \log_r^c \right] \rightarrow \log_r^a + \log_r^c = \left[\log_r^{10} = 5 \right]$$

$$\log_r^a - \log_r^c = \log_r^{\frac{a}{c}} = \log_r^c \rightarrow \boxed{\log_r^a = 2/4}$$

$$\frac{\log_r^a}{\log_r^{10}} = \log_r^{\frac{a}{10}} = \frac{\frac{2}{4}}{\frac{1}{5}} = \frac{1/2}{1/5} = 5/2 = 2.5$$

$$\log_r^{11} = \log_r^{\frac{c}{r}} + \log_r^{\frac{r}{c}} = \frac{1}{r} \log_r^c + \frac{1}{c} = m \rightarrow \frac{1}{c} \log_r^c = m - \frac{1}{c} = \frac{cm-1}{c}$$

$$\rightarrow \boxed{\log_r^{\frac{r}{c}} = \frac{cm-1}{r}} \rightarrow \log_r^{12} = \log_r^{\frac{r}{c}} + \log_r^{\frac{c}{r}} = \frac{1}{r} \log_r^c + 1 = 1 + \frac{cm-1}{r} \times \frac{1}{r}$$

$$= 1 + \frac{cm-1}{r} = \boxed{\frac{cm+c}{r}}$$

$$\left(\frac{r}{\omega} \right)^{rx-1} = \left(\frac{\omega}{r^c} \right)^{x^r} \rightarrow \frac{r^{rx-1}}{\omega^{rx-1}} = \frac{\omega^{cx^r}}{r^{cx^r}} \xrightarrow[\text{وسطین}]{\text{طرفین}} \omega^{cx^r-2x-1} = r^{cx^r-2x-1}$$

$$\rightarrow \omega = r \rightarrow cx^r - 2x - 1 = 0 \xrightarrow[\text{برای بدست آوردن}]{\text{معادله درجه دوم}} x_2 - 1 \times \text{عقده} \quad \boxed{\text{جوابی در اعداد حقیقی نیست}} \quad x_2 = \frac{1}{c} \checkmark$$

$$\log_1^{(4 \times \frac{1}{c} + 1)} = \log_1^{\frac{r}{c}} = \log_r^{\frac{r}{c}} = \frac{r}{c}$$

$$\log_r^b = \frac{r}{c} (1 + \log_r^c) = \log_r^{\sqrt{b}^2} = \frac{r}{c} \log_r^{\sqrt{b}} \rightarrow \frac{r}{c} (1 + \log_r^c) = \frac{r}{c} \log_r^{\sqrt{b}} \rightarrow$$

$$\rightarrow \log_r^{\sqrt{b}} = 1 + \log_r^c = \log_r^r + \log_r^c = \log_r^4 \rightarrow \sqrt{b} = 4 \rightarrow b = 16$$

$$\log^{cb-1} = \log(1.1-1) = \log 1.1 = \boxed{2}$$

$$\frac{b+c}{r} = a \rightarrow \frac{-b}{-ra} = \frac{b}{rb+rc} \rightarrow \frac{rb+rc}{b} = \log r \rightarrow r + \frac{rc}{b} = 2 \log r$$

$$\rightarrow r + \frac{rc}{b} = \log r \rightarrow \frac{rc}{b} = \log r - \log 1.0$$