۱)

$y = x^r \to x=1 \to y=1$

$\to x=r \to y=9 \to \begin{cases} 1 = r^{A+B} \to -A+B=0 \\ 9 = r^{rA+B} \to \end{cases}$

$rA+B=r$

$rA=r \to A=1 \quad B=-1$

$f(x) = r^B = r^{-1} = \boxed{\frac{1}{r}}$

---

۲)

$\log_r^{(rx+10)} = x+r \to r^x \times r^r = r^{rx}+10 \to r^x = t \to t^r+10 = rAt \to t^r-At+10 = (t-r)(t-\Delta)$

$t=r \to r^x = r \to \log_r r$

$t=\Delta \to r^x = \Delta \to \log_r \Delta \to \log_r r + \log_r \Delta, \log_r \frac{10}{r}$

---

۳)

$(\log_{r1} r)^r + \left[\left(\log_{r1} \frac{1}{r1} + \log_{r1} V \right) \times \left(r \log_{r1} r1 + \log_{r1} r \right) \log_r^{r1} \right] = \to t^r + \left[\underbrace{(1+t-r)}_{r-t} \times \underbrace{(r+t)}_{r+t} \right]$

$\boxed{\Delta} = t^r + t - r^r + \Delta$

---

۴)

$\log (1-x)^r + r \log (1-x) = \Delta \to \Delta \log (1-x) = \Delta \to \log_{(1-x)} 1 \to 1-x = 10 \to x = -9$

$\log_r^q = r$

---

۵)

$(x-r)(x^r+rx+r) = x^r-A = A-1 \to x^r = 1A \to x = \sqrt[r]{r^r} \to \log_{\sqrt[r]{r}} r^r \to$

$y = \frac{rA}{r} \to$

---

۶)

$\log (r-x) - \log \frac{1}{(x-r)^r} = r \to \log (r-x) \quad \log \frac{1}{(r-x)^r} = r \to \log \frac{r-x}{\frac{1}{(r-x)^r}} = r \to (r-x)^r = 1000 \to r-x = 10 \to x = -A$

$\to \log (r-x)^r$

$\log \frac{1}{\sqrt{r}} = q \log \frac{r}{r} = q$

فهرزاد شوشتری

۷)

$\frac{2+\sqrt{4}}{2}$ ، $\frac{4+\sqrt{4+4}}{2}$ ، $4+4=8$ ، $x^2-4x-2=0$ ، x^2-2 ، x^3 ، x^{x^2-2}

$\log_4 4 = 1$ ، $\boxed{\frac{1}{2}}$ ، $2+\sqrt{4}=4$ (x-2)

---

۸)

$\frac{\log_3 8}{\log_3 2}$ ، $\frac{3\log_3 2}{2\log_3 2+\log_3 3}$ ، $\frac{\frac{3}{2}}{2+\frac{1}{2}}$ ، $\frac{\frac{15}{8}}{\frac{15}{4}}$ ، $\frac{15}{4}$ ، $\frac{5}{2}$

---

۹)

$\frac{\log_4 6}{\log_{12} 3}$ ، $\frac{3\log_3 2+\log_3 3}{2\log_3 2+\log_3 3}$ ، $\frac{3+1}{2+1}$ ، $\frac{4}{3}$ ، $\frac{\frac{12}{10}}{\frac{18}{10}}$ ، $\frac{12}{18}$

---

۱۰)

$a\log_2 2 - a + b\log_2 4 = 0 \rightarrow a\log_2 2 + b\log_2 2^2 = a \rightarrow b\log_2 2 = a - a\log_2 2$

$b\log_2 2 = a(1-\log_2 2) \rightarrow \frac{b}{a} = \frac{1-\log_2 2}{\log_2 2} \rightarrow \frac{\log_2 \frac{10}{2^2}}{\log_2 10} = \frac{\log_2 5}{\log_2 10} = \log_{10} 5$

$(\sqrt{2})^{\log_2 5} \rightarrow 5\log_2 \sqrt{2} \rightarrow 5\times\frac{1}{2}\log_2 2 = 5\times\frac{1}{2} = \boxed{\frac{5}{2}}$