نام و نام خانوادگی ..... پاسخنامه تشریحی تکلیف شماره ..... کلاس ۲۰

۱

$f(x) = \mu^{Ax+B} \Rightarrow y=x^{\mu} \Rightarrow x=1 \Rightarrow y=1 \; , \; x=\mu \Rightarrow y=9 \Rightarrow \mu^{A+B}=1 \Rightarrow A+B=0 \; , \; \mu^{\mu A+B}=9 \Rightarrow \mu^{A+B}=\mu^{\mu}$

$\Rightarrow \begin{cases} A+B=0 \\ \mu A+B=\mu \end{cases} \Rightarrow \mu A=\mu \Rightarrow A=1 \Rightarrow B=-1 \Rightarrow \mu^{x-1}=y \Rightarrow x=0 \Rightarrow \mu^{-1}=y \Rightarrow y=\frac{1}{\mu}$ ✓ (۲)

۲

$\log_{\mu} \varepsilon^{x+\omega} = x+\mu \Rightarrow \varepsilon^{x+\omega} = \mu^{x+\mu} \Rightarrow \mu^{\mu x}+\omega = \lambda \mu^{x}$ (۲)

$\Rightarrow \mu^{\mu x} - \lambda \mu^{x} + \omega = 0 \Rightarrow \mu^{x}=t \Rightarrow t^{\mu}-\lambda t+\omega=0 \Rightarrow (t-\omega)(t-\mu)=0 \Rightarrow t=\omega \quad t=\mu$

$\mu^{x}=\mu \Rightarrow \log_{\mu}^{\mu}=x \; , \; \mu^{x}=\omega \Rightarrow \log_{\mu}^{\omega}=x \Rightarrow \alpha+\beta = \log_{\mu}^{\mu} + \log_{\mu}^{\omega} = \log_{\mu}^{\omega\omega}$ ✓

۳

$(\log_{\mu\mu}^{\mu})^{\mu} + \log_{\mu\mu}^{\varepsilon\omega} \times \log_{\mu\mu}^{\mu\mu\mu} \Rightarrow (\log_{\mu\mu}^{\mu})^{\mu} + (\log_{\mu\mu}^{\mu\mu} + \log_{\mu\mu}^{\omega})(\mu \log_{\mu\mu}^{\mu} + \log_{\mu\mu}^{\omega} + \log_{\mu\mu}^{\mu\mu})$ (۲)

$\Rightarrow \log_{\mu\mu}^{\omega} = 1 - \log_{\mu\mu}^{\mu} \Rightarrow (\log_{\mu\mu}^{\mu})^{\mu} + (1+1-\log_{\mu\mu}^{\mu})(\mu \log_{\mu\mu}^{\mu} + 1 - \log_{\mu\mu}^{\mu} + 1)$

$\Rightarrow (\log_{\mu\mu}^{\mu})^{\mu} + (\mu - \log_{\mu\mu}^{\mu})(\log_{\mu\mu}^{\mu} + \mu) \Rightarrow (\log_{\mu\mu}^{\mu})^{\mu} + \mu \log_{\mu\mu}^{\mu} + \mu^{\varepsilon} - (\log_{\mu\mu}^{\mu})^{\mu} - \mu \log_{\mu\mu}^{\mu} = \mu^{\varepsilon}$ ✓

۴

$\log(x^{\mu}-\mu x+1) + \mu \log(1-x) = \omega \Rightarrow \log(x-1)^{\mu} + \log -(x-1)^{\mu} = \omega \Rightarrow \log -(x-1)^{\omega} = \omega$ (۲)

$\Rightarrow \omega \log -(x-1)^{\mu} = \omega \Rightarrow \log -(x-1)^{\mu} = 1 \Rightarrow -(x-1)=10 \Rightarrow (x-1)=-10 \Rightarrow x=-9$ ✓

$\Rightarrow \log_{\mu}^{-x} \Rightarrow \log_{\mu}^{9} = \mu$ ✓

۵

$\log_{\mu}(x^{\mu}+\mu x+\varepsilon) + \log_{\mu}^{(x-\mu)} = \mu \Rightarrow \log_{\mu}^{(x^{\mu}+\mu x+\varepsilon)(x-\mu)} = \mu \Rightarrow (x^{\mu}+\mu x+\varepsilon)(x-\mu) = \lambda$ (۲)

$\Rightarrow x^{\mu}+\mu x^{\mu}+\varepsilon x-\mu x^{\mu}-\varepsilon x-\lambda = \lambda \Rightarrow x^{\mu}-\lambda = \lambda \Rightarrow x^{\mu}=\mu\varepsilon \Rightarrow x=\sqrt[\mu]{\mu\varepsilon}$ ✓

$\Rightarrow \log_{\sqrt[\mu]{\mu}}^{\sqrt[\mu]{\mu\varepsilon}} = \varepsilon$ ✓

۶ (۲)

$\log_{(2-a)} - \log_{\frac{1}{(a-2)^2}} = 3 \Rightarrow \log_{-(a-2)} - \log_{(a-2)^{-2}} = 3$

$\Rightarrow \log_{\frac{-(a-2)}{(a-2)^{-2}}} = 3 \Rightarrow \log_{-(a-2)^3} = 3 \Rightarrow -(a-2)^3 = 10^3 \Rightarrow (a-2) = 10 \Rightarrow a-2 = -10$

$\rightarrow a = -8 \Rightarrow \log_{\sqrt{2}} 8 = 6$ ✓

۷ (۲)

$3^{a^2-2} = 81^{a} \Rightarrow 3^{a^2-2} = 3^{4a} \Rightarrow a^2-2 = 4a \Rightarrow a^2-4a-2=0 \Rightarrow a^2-4a+4 = 6 \Rightarrow (a-2)^2 = 6$

$\rightarrow (a-2) = \sqrt{6} \Rightarrow \log_{6} \sqrt{6} = \frac{1}{2}$ ✓

۸ (۲)

$\log_{2^2} = \frac{\omega}{8} \Rightarrow \log_{16} = ? \Rightarrow \frac{\log_{3} 8}{\log_{3} 16} \Rightarrow \frac{3\log_{3} 2}{4\log_{3} 2} \Rightarrow \frac{3\left(\frac{\omega}{8}\right)}{4\frac{\omega}{8}} \Rightarrow \frac{\frac{3\omega}{8}}{\frac{4\omega}{8}} = \frac{3\omega}{4\omega} = \frac{\omega}{4}$ ✓

۹ (۲)

$\log_{\varepsilon}^{3} = 0/8 \Rightarrow \log_{12}^{6} = ? \Rightarrow \frac{\log_{\varepsilon}^{6}}{\log_{4}^{12}} \Rightarrow \frac{\log_{\varepsilon}^{2} + \log_{\varepsilon}^{3}}{\log_{\varepsilon}^{4} + \log_{4}^{3}}$

$\Rightarrow \frac{\frac{1}{2} + \log_{\varepsilon}^{3}}{1 + \log_{4}^{3}} \Rightarrow \frac{\frac{1}{2} + 0/8}{1 + 0/8} \rightarrow \frac{1/3}{1/8} = \frac{13}{18}$ ✓

دقت!

۱۰ (۲)

$(a\log 2)x^2 + cax + b\log 2 = 0 \rightarrow x = -1 \Rightarrow a\log 2 - a + b\log 2 = 0 \Rightarrow \log 2 (a+b) = a$

$\Rightarrow \log 2 = \frac{a}{a+b} \Rightarrow \frac{1}{\log 2} = \frac{a+b}{a} \Rightarrow \frac{1}{\log 2} = 1 + \frac{b}{a} \Rightarrow \frac{b}{a} = \frac{1}{\log 2} - 1$

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

$\rightarrow 5^{\frac{1}{2}} \rightarrow \sqrt{5}$ ✓