مهدی کاظمی گروه پیسر B

$\log_{n} m = a \qquad \log_{mn} m^{۲}n = b \qquad n^{a} = m \qquad \log_{n^{a+۱}} n^{۲a+۱} = b$ ①

$\frac{۲a+۱}{a+۱} = b = \frac{۲a+۲-۱}{a+۱} = ۲ - \frac{۱}{a+۱} \Longrightarrow ۱<b<۲ \longrightarrow [b]=۱$

$۲\log_{m} ۹ + \log_{a} \sqrt{m} = ۲ \qquad m=۹ \qquad a=?$ ③ — ②

$۲\log_{۹} a + \log_{a} \sqrt{۹} = ۲. \qquad \underbrace{۲\log_{۳^{۲}} a}_{} + \log_{a} ۳ = ۲$

$\log_{۳} a + \log_{a} ۳ = ۲$

$\log_{a} ۳ = ۱ \to a=۳ \Longleftarrow \frac{۱}{\log_{a} ۳} + \log_{a} ۳ = ۲$

$\log ۲ = ۰/۳ \qquad \log ۳ = ۰/۴ \qquad \underbrace{(\log \tfrac{۵}{۳})}_{۰/۳} m^{۲} + \underbrace{(\log ۹)}_{۰/۸} m - \underbrace{\log ۱۵}_{۱/۱} = ۰$ ④

$\log \frac{۵}{۳} = \log ۵ - \log ۳ \longrightarrow ۰/۷ - ۰/۴ = ۰/۳$

$\log ۵ = \log \frac{۱۰}{۲} = \log ۱۰ - \log ۲ = ۱ - ۰/۳ = ۰/۷$

$\log ۹ = ۲\log ۳ = ۰/۸ \qquad \log ۱۵ = \log ۵ + \log ۳$

$۰/۷ + ۰/۴ = ۱/۱$

$۰/۳m^{۲} + ۰/۸m - ۱/۱ = ۰$

$m^{۲} + ۰/۸m - ۰/۳۳ = ۰ \longrightarrow (m+۱/۱)(m-۰/۳) = ۰$

$-\frac{۱۱}{۳} = -\frac{۱/۱}{۰/۳} \qquad \frac{۰/۳}{۰/۳} = ①$

$۱ - (-\frac{۱۱}{۳}) = \frac{۳+۱۱}{۳} = \frac{۱۴}{۳}$ اختلاف ۲ ریشه

SCBO

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9

$\log_{2}^{7} = 2.8 \qquad \log_{5}^{2} = 0.5 \qquad \log_{14}^{10} = ?$

$$\log_{14}^{10} = \log_{14}^{2} + \log_{14}^{5}$$

$$\log_{14}^{2} = \frac{\log_{5}^{2} \rightarrow 0.5}{\log_{5}^{14} \rightarrow 1.9} = \frac{5}{19}$$

$$\log_{5}^{14} = \underbrace{\log_{5}^{2} + \log_{5}^{7}}_{0.5 + 1.4}$$

$$\log_{5}^{7} = \frac{\log_{2}^{7}}{\log_{2}^{5}} = 1.4 \qquad \left(\frac{28}{10},\ \frac{10}{5}\right)$$

$$\log_{14}^{5} = \frac{\log_{2}^{5}}{\log_{2}^{14}} = \frac{10}{19} \qquad \left(\frac{10}{5},\ 3.8\right)$$

$$+ \qquad \frac{5}{19} + \frac{10}{19} = \frac{15}{19}$$

$$\log_{2}^{14} = \underbrace{\log_{2}^{7} + \log_{2}^{2}}_{2.8 + 1}$$

6

$\log_{3}^{5} = 1.5 \qquad \log_{2}^{3} = 1.6 \qquad \log_{15}^{6} = ?$

$$\log_{15}^{2} + \log_{15}^{3} = \log_{15}^{6}$$

$$\log_{15}^{2} = \frac{\log_{3}^{2}}{\log_{3}^{15}} = \frac{1}{4} \qquad \left(\frac{10}{16},\ \frac{25}{10}\right)$$

$$\log_{15}^{3} = \frac{\log_{5}^{3}}{\log_{5}^{15}} = \frac{10}{15} \Big/ \frac{25}{15} = \frac{2}{5}$$

$$\log_{5}^{15} = \log_{5}^{3} + \log_{5}^{5}$$

$$\frac{10}{15} + \frac{15}{15} = \frac{25}{15}$$

$$\log_{3}^{15} = \underbrace{\log_{3}^{5} + \log_{3}^{3}}_{1.5 + 1} = 2.5$$

$$\frac{2}{5} + \frac{1}{4} = \frac{8+5}{20} = \frac{13}{20}$$

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(7)

$\log_8 18 = m \qquad \log_4 12 = ?$

$\log_8 18 = \log_8 2 + \log_8 9 = m$

$\log_{2^3} 2 + \log_{2^3} 3^2$

$\frac{1}{3}\underbrace{\log_2 2}_{1} + \frac{2}{3}\log_2 3 = \frac{1}{3} + \frac{2}{3}\log_2 3 = m$

$m = \frac{2}{3}\log_2 3 + \frac{1}{3}$

$\frac{2}{3}\log_2 3 = (m - \frac{1}{3})$

$\log_2 3 = \frac{(m-\frac{1}{3})\times 3}{2}$

$\log_4 12 = \underbrace{\log_4 3}_{\frac{3m-1}{4}} + \underbrace{\log_4 4}_{1}$

$\frac{1}{2}\log_2 3 = \frac{1}{2}\left(\frac{(m-\frac{1}{3})3}{2}\right)$

$\frac{1}{2}\log_2 3 = \frac{3m-1}{4}$

$\frac{3m-1}{4} + \frac{4}{4} = \frac{3m+3}{4}$

$\log_4 12 = \frac{3(m+1)}{4}$

(8)

$(0.4)^{2m-1} = \left(\frac{125}{8}\right)^{m^2} \qquad \log_8 (9m+1) = ?$

$\frac{2}{5}^{2m-1} = \frac{5}{2}^{3m^2} \longrightarrow 3m^2 = -2m+1$

$3m^2+2m-1=0$

$m^2+2m-3=0$

$(m+3)(m-1)$

$\alpha \; (-6) = \frac{-3}{3} \qquad \frac{1}{3}$ ✓

$\log_{2^3} 2^2 = \frac{2}{3}\cancel{\log_2 2} = \frac{2}{3}$

$-1\cancel{0}$

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$\log_2^3 = a \qquad \log_8^b = \frac{2}{3}(1+a)$ (9)

$\log(3b-8) = ?$

$\log_8^b = \frac{1}{3}\log_2^b = \frac{2}{3}\,1+a$

$\log_2^2 + \log_2^3 = \log_2^6 \qquad \frac{2}{3}\log_2^6 = \log_8^{36}$

$\log_8^b \to b = 36$

$\log^{2} = \frac{-b}{2c} \to \frac{b}{c} = \frac{1}{\log^{16}} \to \frac{b}{c} = \log_{16}^{10}$ (10)

$\frac{b+c}{2} = a \to b+c = 2a \to b = c-2a \to \frac{b}{c} = -1 + \frac{2a}{c}$

$\frac{-2a}{c} = \log_{16}^{\frac{5}{8}} \to \frac{a}{-c} = \log_{\frac{5}{8}}^{256} \to \frac{c}{a}\ \log_{256}^{\frac{5}{8}}$

$\frac{c}{a} = \frac{1}{8}\times(\log_2^5 - 3) \to ((2^{-\frac{1}{8}})^{\frac{1}{8}})^{\log_2^5 - 3}$

$= \frac{5^{-\frac{1}{64}}}{8^{-\frac{1}{64}}} = \frac{8^{\frac{1}{64}}}{5^{\frac{1}{64}}} = \sqrt[64]{\frac{8}{5}}$

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