

نام و نام خانوادگی شماره کلاس
 پاسخنامه تشریحی تکلیف شماره ۲۳۰۰ کلاس
 نام و نام خانوادگی شماره کلاس

$$\log_{mn}^m = \log_{mn}^m + \log_{mn}^n = r \log_{mn}^m + \log_{mn}^n = \frac{r}{\log_{mn}^m} + \frac{1}{\log_{mn}^n} = \frac{r}{\log_{m+1}^n} + \frac{1}{\log_{n+1}^m}$$

$$\log_{n+1}^m = a \rightarrow \frac{r}{\frac{1}{a+1}} + \frac{1}{a+1} = \frac{r}{\frac{1}{a+1}} + \frac{1}{a+1} = \frac{r(a+1)}{a+1} = b = \frac{r(a+1)-1}{a+1} = r - \frac{1}{a+1}$$

$$[b] = r - \left[\frac{1}{a+1} \right] \xrightarrow{a > 0} 0 < \frac{1}{a+1} < 1 \Rightarrow -1 < \frac{1}{a+1} < 0 \rightarrow [b] = r - 1 = 1$$

الف) $A = \frac{x}{\log_{\frac{1}{x}} x} \geq 0$

$\log_{\frac{1}{x}} x = 0 \rightarrow x = 1$

$\log_{\frac{1}{x}} x \neq 0 \rightarrow x \neq 1, x > 0$

جدول علامت:

x	-	0	+	1
$\log_{\frac{1}{x}} x$	+	0	+	-
A	-	0	+	-

مجموعه جواب: (0, 1)

ب) $\log_{\frac{x^2-x-2}{x}} x \rightarrow x^2-x-2 > 0 \rightarrow (x-2)(x+1) > 0 \rightarrow x < -1 \text{ or } x > 2$

$\sqrt{x^2-1} \rightarrow x^2-1 > 0 \rightarrow (x-1)(x+1) > 0 \rightarrow x < -1 \text{ or } x > 1$

مجموعه جواب: $(-\infty, -1) \cup (2, +\infty)$

$$r \log_a^a + \log_a^{\sqrt{a}} = r = r \log_{\frac{r}{r}}^a + \log_a^r = \frac{r}{r} \log_{\frac{r}{r}}^a + \log_a^r = r$$

$$\rightarrow = \log_{\frac{r}{r}}^a + \frac{1}{\log_{\frac{r}{r}}^a} = r \xrightarrow{\log_{\frac{r}{r}}^a = A} A + \frac{1}{A} = r \Rightarrow A^2 + 1 = rA \rightarrow A^2 - rA + 1 = 0$$

$$\rightarrow (A-1)^2 = 0 \rightarrow A = 1 = \log_{\frac{r}{r}}^a \rightarrow a = r$$

$$\log_{\frac{1}{16}}^{\frac{1}{16}} = \log_{\frac{1}{16}}^{\frac{1}{16}} - \log_{\frac{1}{16}}^{\frac{1}{16}} = \log_{\frac{1}{16}}^{\frac{1}{16}} - \log_{\frac{1}{16}}^{\frac{1}{16}} = \log_{\frac{1}{16}}^{\frac{1}{16}} - \log_{\frac{1}{16}}^{\frac{1}{16}} = 1 - 0,4 - 0,4 = 0,2$$

$$\log_{\frac{1}{16}}^{\frac{1}{16}} = \log_{\frac{1}{16}}^{\frac{1}{16}} + \log_{\frac{1}{16}}^{\frac{1}{16}} = \log_{\frac{1}{16}}^{\frac{1}{16}} + \log_{\frac{1}{16}}^{\frac{1}{16}} = \log_{\frac{1}{16}}^{\frac{1}{16}} - \log_{\frac{1}{16}}^{\frac{1}{16}} + \log_{\frac{1}{16}}^{\frac{1}{16}} = 1 - 0,4 + 0,4 = 1,1$$

$$\log_{\frac{1}{16}}^{\frac{1}{16}} = r \log_{\frac{1}{16}}^{\frac{1}{16}} = r \times 0,4 = 0,8$$

$$\rightarrow \frac{r}{16} x^2 + \frac{1}{16} x - \frac{11}{16} = 0 \rightarrow 16x^2 + x - 11 = 0 \rightarrow x^2 + 8x - 11 = (x+11)(x-1) = 0$$

$$\Rightarrow x = \frac{r}{16} = 1, x = -\frac{11}{16} \rightarrow \text{اصناف: } 1 - \left(-\frac{11}{16}\right) = 1 + \frac{11}{16} = \frac{27}{16}$$

$$\log_{\frac{1}{16}}^{\frac{1}{16}} = \frac{\log_{\frac{1}{16}}^{\frac{1}{16}}}{\log_{\frac{1}{16}}^{\frac{1}{16}}} = \frac{\log_{\frac{1}{16}}^{\frac{1}{16}} + \log_{\frac{1}{16}}^{\frac{1}{16}}}{\log_{\frac{1}{16}}^{\frac{1}{16}} + \log_{\frac{1}{16}}^{\frac{1}{16}}} = \frac{1 + \log_{\frac{1}{16}}^{\frac{1}{16}}}{1 + \log_{\frac{1}{16}}^{\frac{1}{16}}} = \frac{1+r}{1+r,8} = \frac{r}{r,8} = \frac{r}{\frac{r}{16}} = \frac{16}{16}$$

$$\log_{\frac{1}{16}}^{\frac{1}{16}} = \frac{1}{\log_{\frac{1}{16}}^{\frac{1}{16}}} = \frac{1}{0,8} = \frac{10}{8} = \frac{5}{4}$$

$$\log_{10}^4 = \frac{\log_r^4}{\log_r 10} = \frac{\log_r^3 + \log_r^1}{\log_r^3 + \log_r^1} = \frac{1 + \frac{1}{r}}{1 + \frac{1}{r}} = \frac{\frac{1+r}{r}}{\frac{1+r}{r}} = \frac{1+r}{r} = \frac{1}{r} = \frac{1}{r}$$

$$\log_r^r = \frac{1}{\log_r^r} = \frac{1}{1/4} = \frac{1}{1/4} = \frac{4}{1} = 4$$

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$$\log_a^m = \log_a^q + \log_a^r = \frac{1}{r} \log_r^r + \frac{1}{r} \log_r^r = \frac{1}{r} \log_r^r + \frac{1}{r} = m \rightarrow \log_r^r = \frac{r}{r} (m - \frac{1}{r})$$

$$\rightarrow \log_r^r = \frac{r}{r} (m - \frac{1}{r}) = \frac{r(m-1)}{r}$$

$$\log_r^r = \log_r^r + \log_r^r = 1 + \log_r^r = 1 + \frac{1}{r} \log_r^r = 1 + \frac{1}{r} \times \frac{r(m-1)}{r} = 1 + \frac{r(m-1)}{r}$$

$$= \frac{r + r(m-1)}{r} = \frac{rm}{r}$$

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$$(0, r)^{r-1} = (\frac{r}{\omega})^{r-1}, (\frac{1}{r})^r = (\frac{1}{r})^r = (\frac{1}{r})^r \Rightarrow (0, r)^{r-1} = (\frac{1}{r})^{1-r}$$

$$(\frac{1}{r})^{1-r} = (\frac{1}{r})^{1-r} \rightarrow r^{1-r} = 1 - r \rightarrow r^{1-r} + r - 1 = 0 \rightarrow r^{1-r} + r - 1 = (r+1)(r-1)$$

$$\rightarrow r = -\frac{r}{r} = -1, r = \frac{1}{r}$$

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$$\log_a^{(-9+1)} \rightarrow \text{تعريف نسبه}$$

$$\log_a^{(9 \times \frac{1}{r} + 1)} = \log_a^r = \frac{r}{r} \log_r^r = \frac{r}{r}$$

$$\log_a^b = \frac{1}{r} \log_r^b = \frac{r}{r} (1+a) \rightarrow \log_r^b = r(1+a) = r(1 + \log_r^r) = r(\log_r^1 + \log_r^r)$$

$$= r(\log_r^1) = \log_r^r = \log_r^b \rightarrow b = r^4$$

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$$\rightarrow r^b - 1 = r^x r^{11} - 1 = 10^8 - 1 = 100 \rightarrow \log^{100} = r$$

$$\log_{\frac{1}{a}}^{\frac{1}{b}} = \frac{1}{s} = \frac{1}{-\frac{b}{a}} = \frac{a}{b} = \log_r^r = r \log_r^r + \frac{ra}{b} = \log_r^r \Rightarrow \frac{a}{b} = \frac{\log_r^r}{r}$$

$$\rightarrow \frac{a}{b} = \frac{r}{\log_r^r} = r \log_r^r$$

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$$a = \frac{c+b}{r} \Rightarrow ra = c+b \xrightarrow{\div a} r = \frac{c}{a} + \frac{b}{a} = \frac{c}{a} + r \log_r^1 \rightarrow \frac{c}{a} = r - r \log_r^1 = r(1 - \log_r^1)$$

$$= r(1 - \log_r^1 - \log_r^1) = -r \log_r^1 \rightarrow \frac{1}{\sqrt{r}} = (\frac{1}{r})^{\frac{1}{a}} = r^{-\frac{1}{a}} \rightarrow (r^{-\frac{1}{a}})^{\frac{c}{a}} = r^{-\frac{r \log_r^1}{a}}$$

$$= r^{-\frac{\log_r^1}{r}} = (r^{\log_r^1})^{\frac{1}{r}} = (a^{\log_r^1})^{\frac{1}{r}} = (a)^{\frac{1}{r}} = \sqrt[r]{a}$$

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