

به نام خدا

Subject:

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۲۳

و ناز حاجی بابا - یازدهم پسر ۱۳ - فکلیف

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$$b = \log_{mn} m^n = \frac{\log_n m^n}{\log_n mn} = \frac{\log_n m^n + \log_n n}{\log_n m + \log_n n} = \frac{2 \log_n m + 1}{\log_n m + 1} = \frac{2a+1}{a+1}$$

$$= \frac{a+1+a}{a+1} = 1 + \frac{a}{a+1} \quad \text{از طرف چپ } (a) \text{ پس } 0 < \frac{a}{a+1} < 1 \text{ است}$$

$$[b] = \left[1 + \frac{a}{a+1} \right] = 1 + \left[\frac{a}{a+1} \right] = 1 + 0 = 1 \Rightarrow [b] = 1$$

برای اینکه $\frac{x}{\log \frac{x}{1/r}}$ معنی داشته باشد و تعریف شود باید $0 < x < 1$ باشد. نتیجه ضابطه است:

$$y = \sqrt{\frac{x}{\log \frac{x}{1/r}}}$$

$$\frac{x}{\log \frac{x}{1/r}} > 0 \xrightarrow{x > 0} \log \frac{x}{1/r} > 0 \Rightarrow x < 1 \Rightarrow 0 < x < 1$$

$$D_f = (0, 1)$$

بازوبه دامنه تعاریف باید همواره عبارت جذری نگاریم مثبت باشد.

$$(x^2 - x - 2) \geq 0 \Rightarrow (x-2)(x+1) \geq 0$$

$$\begin{array}{c|c|c} -1 & 2 & \\ \hline + & - & + \end{array} \Rightarrow \begin{array}{l} x > 2 \\ x < -1 \end{array} \quad (1)$$

همچنین عبارت زیر را باید نامنفی باشد.

$$x^2 - 1 \geq 0 \Rightarrow x^2 \geq 1$$

عبارت معخرج هم همیشه منفی شود همیشه مثبت است.

$$x \geq 1 \quad \begin{array}{c|c|c} -1 & 1 & \\ \hline + & - & + \end{array} \quad x \leq -1 \quad (2)$$

$$D_f = (1) \cap (2) = (-\infty, -1) \cup (2, +\infty)$$

$$2 \log_a a + \log_a \sqrt{a} = 2 \Rightarrow \log_{\frac{1}{a^2}} a + \log_a \sqrt{a} = 2$$

جمع هر عدد مثبت یا معکوسش نیز مساوی ۲ است و فقط در ۳۰ صورتی ۲ می شود که آن عدد یک برده باشد.

$$\log_{\sqrt{a}} a + \log_a \sqrt{a} = 2 \Rightarrow \log_{\sqrt{a}} a + \frac{1}{\log_{\sqrt{a}} a} = 2$$

$$\Rightarrow \log_{\sqrt{a}} a = 1 \xrightarrow{a=9} \log_3 a = 1 \Rightarrow a = 3$$

$$\log r + \log \omega = \log 10 = 1 \Rightarrow \log r = 1 - \log \omega \Rightarrow \frac{1}{r} = 1 - \log \omega \Rightarrow \log \omega = \frac{1}{r}$$

$$\log \frac{\omega}{r} = \log \omega - \log r = \frac{1}{r} - \frac{1}{r} = 0$$

$$\log 9 = \log r^r = r \log r = \frac{1}{10}$$

$$\log 10 = \log r + \log \omega = \frac{1}{10} + \frac{1}{r} = 1$$

$$\Rightarrow (\log \frac{\omega}{r}) x^r + (\log 9) x - (\log 10) = 0 \Rightarrow \frac{1}{r} x^r + \frac{1}{10} x - 1 = 0$$

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$$\Rightarrow \frac{1}{10} x^r + \frac{1}{10} x - \frac{11}{10} = 0 \xrightarrow{\times 10} x^r + x - 11 = 0 \Rightarrow (x-1)(x+11) = 0$$

$$\Rightarrow \begin{cases} x=1 \\ x=-11 \end{cases} \Rightarrow \text{اختلاف بينهما: } 1 - \left(-\frac{11}{r}\right) = \frac{11}{r}$$

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$$\log \frac{V}{r} = \frac{1}{10} = \frac{\log V}{\log r} = \frac{1}{10} \Rightarrow \log V = \frac{1}{10} \log r$$

$$\log \frac{r}{\omega} = \frac{1}{10} = \frac{\log r}{\log \omega} = \frac{1}{10} \Rightarrow \log \omega = \frac{1}{10} \log r$$

$$\log r + \log \omega = \log 10 = 1 \Rightarrow r \log r = 1 \Rightarrow \log r = \frac{1}{r} \Rightarrow \log V = \frac{1}{10}$$

$$\log 19 = \log r + \log V = \frac{1}{10} + \frac{1}{10} = \frac{19}{10}$$

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$$\log \frac{10}{19} = \frac{\log 10}{\log 19} = \frac{1}{\log 19} = \frac{10}{19}$$

$$\log \frac{\omega}{r} = \frac{1}{10} = \frac{\log \omega}{\log r} = \frac{1}{10} \Rightarrow \log \omega = \frac{1}{10} \log r \Rightarrow \log \omega = \frac{1}{10} \log r$$

$$\log \frac{r}{\omega} = \frac{\log r}{\log \omega} = \frac{1}{10} \Rightarrow \log r = \frac{1}{10} \log \omega \Rightarrow \frac{1}{10} \log r = \log \omega$$

$$\text{P4YCO } \log r + \log \omega = 1 \Rightarrow \frac{1}{10} \log r = 1 \Rightarrow \log r = \frac{1}{10} \Rightarrow \log \omega = \frac{1}{10} \Rightarrow \log r = \frac{1}{10}$$

$$\log 4 = \log r + \log r' = \frac{\omega}{1V} + \frac{1}{1V} = \frac{1\omega}{1V}$$

$$\log 1\omega = \log \omega + \log r' = \frac{1r'}{1V} + \frac{1}{1V} = \frac{r'}{1V}$$

$$\log \frac{r}{1\omega} = \frac{\log 4}{\log 1\omega} = \frac{1\omega/1V}{r'/1V} = \frac{1\omega}{1V} \times \frac{1V}{r'} = \frac{r'}{r} \Rightarrow \log \frac{r}{1\omega} = \frac{r'}{r}$$

$$\log \frac{1\omega}{r} = m \Rightarrow \log \frac{1\omega}{r'} = m \Rightarrow \frac{1}{r'} \log \frac{1\omega}{r} = m \Rightarrow \log \frac{1\omega}{r} = r'm$$

$$\log \frac{r}{r'} + \log \frac{r'}{r} = r'm \Rightarrow 1 + \log \frac{r'}{r} = r'm \Rightarrow 1 + r \log \frac{r'}{r} = r'm$$

$$\Rightarrow r \log \frac{r'}{r} = r'm - 1 \Rightarrow \log \frac{r'}{r} = \frac{r'm - 1}{r}$$

$$\log \frac{1r'}{r} = \log \frac{r'}{r} + \log \frac{r}{r} = \log \frac{r'}{r} + 1 = \frac{1}{r} \log \frac{r'}{r} + 1$$

$$= \frac{1}{r} \left(\frac{r'm - 1}{r} \right) + 1 = \frac{r'm - 1}{r^2} + 1 = \frac{r'}{r^2} (m + 1)$$

$$(\frac{r}{r'})^{r'm-1} = \left(\frac{1r'}{r} \right)^{r'm} \Rightarrow \left(\frac{r}{r'} \right)^{r'm-1} = \left(\frac{\omega}{r'} \right)^{r'm} \Rightarrow \left(\frac{r}{\omega} \right)^{r'm-1} = \left(\frac{\omega}{r'} \right)^{r'm}$$

$$\Rightarrow \left(\frac{r}{\omega} \right)^{r'm-1} = \left(\frac{r}{\omega} \right)^{-r'm} \Rightarrow r'm - 1 = -r'm \Rightarrow r'm + r'm - 1 = 0$$

$$\Delta = (r)^2 - 4(r)(-1) = 14 \Rightarrow x = \frac{-r \pm \sqrt{14}}{4} = \frac{-r \pm r'}{4} \Rightarrow \begin{cases} x = -1 \text{ } \checkmark \checkmark \checkmark \\ x = \frac{1}{r'} \checkmark \end{cases}$$

$$\log \frac{1}{r} (q_{n+1}) = \log \frac{r'}{r} = \log \frac{r'}{r} = \frac{r'}{r} \log \frac{r'}{r} = \frac{r'}{r}$$

$$\log \frac{b}{r} = \frac{r'}{r} (1 + a) = \frac{r'}{r} (\log \frac{r'}{r} + \log \frac{r}{r}) = \frac{r'}{r} (\log \frac{r'}{r}) = \log \frac{r'}{r} = \log \frac{r'}{r}$$

$$\Rightarrow \log \frac{b}{r} = \log \frac{r'}{r} \Rightarrow b = r'$$

$$\log (rb - 1) = \log (1 \cdot 1 - 1) = \log 100 = r$$

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$$-Ea r^2 + br + \frac{1}{r} C = 0$$

$$S = \frac{-b}{-Ea} = \frac{b}{Ea} \quad P = \frac{\frac{1}{r} C}{-Ea} = \frac{C}{-Ea}$$

$$\frac{1}{a+r/3} = \log r \Rightarrow r \log r = \frac{Ea}{b} \Rightarrow \frac{a}{b} = \frac{1}{r} \log r = \log \sqrt{r}$$

$$\Rightarrow a = b \times \log \sqrt{r}$$

$$ra = b + C \Rightarrow r b \log \sqrt{r} = b + C \Rightarrow r b \log \sqrt{r} - b = C \Rightarrow C = b(r \log \sqrt{r} - 1)$$

$$\Rightarrow C = b(\log r - \log 1) \Rightarrow C = b \times \log \frac{1}{a}$$

$$\left(r^{-\frac{1}{\lambda}}\right)^{\frac{C}{a}} = r^{-\frac{1}{\lambda} \times \frac{b \cdot \log \frac{1}{a}}{b \cdot \log \sqrt{r}}} = r^{-\frac{1}{\lambda} \log \frac{a^{-1}}{r^{\frac{1}{r}}}} = r^{\frac{1}{\lambda} \log \frac{a}{r}} = r^{\log \frac{a^{\frac{1}{\lambda}}}{r^{\frac{1}{\lambda}}}} = a^{\frac{1}{\lambda}}$$

$$= \sqrt[r]{a} \quad \leftarrow \text{جواب}$$

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