

به نام خدا

19

Subject:

Year:

Month:

Day:

۲۳

و ناز حاجی بابائی - یازدهم پسر B - تکلیف

page: ()

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

$$= \frac{a+1+a}{a+1} = 1 + \frac{a}{a+1} \quad \text{از طرف چپ: } 0 < a < 1 \Rightarrow \frac{a}{a+1} < 1 \text{ است}$$

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

(۲)

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

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

$$\frac{x}{\log \frac{1}{x}} > 0 \Rightarrow \frac{x}{\log \frac{1}{x}} > 0 \Rightarrow x < 1 \Rightarrow 0 < x < 1 \quad \checkmark$$

$$D_f = (0, 1) \quad \checkmark$$

ج) $\frac{\log(x^2 - x - 2)}{\sqrt{x^2 - 1} + 1}$

با توجه به دامنه تعاریف باید همواره عبارت جذری نگاریم مثبت باشد

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

$$\frac{-1}{+} \mid \frac{2}{-} \mid + \Rightarrow x > 2 \text{ یا } x < -1 \quad (1)$$

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

همچنین عبارت زیر راویکال هم باید نامنفی باشد

$$x \geq 1 \text{ یا } x \leq -1 \quad (2)$$

عبارت معخرج هم هیچگاه منفی نشود همیشه مثبت است

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

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

جمع هر عدد مثبت با معکوسش

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

میزان مساوی ۲ است و فقط در ۳۰ صورت ۲ من شود که آن عدد یک بوده

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

$$\log r + \log \omega = \log 10 = 1 \Rightarrow \log r = 1 - \log \omega \Rightarrow r = 1 - \log \omega \Rightarrow \log \omega = 0,7$$

$$\log \frac{\omega}{r} = \log \omega - \log r = 0,7 - 0,9 = -0,2$$

$$\log 9 = \log r^r = r \log r = 0,8$$

$$\log 10 = \log r + \log \omega = 0,9 + 0,7 = 1,6$$

$$\Rightarrow (\log \frac{\omega}{r}) x^r + (\log 9) x - (\log 10) = 0 \Rightarrow 0,2 x^r + 0,8 x - 1,6 = 0$$

10

$$\Rightarrow \frac{r}{10} x^r + \frac{8}{10} x - \frac{16}{10} = 0 \xrightarrow{\times 10} r x^r + 8 x - 16 = 0 \Rightarrow (x-1)(r x + 16) = 0$$

$$\Rightarrow \begin{cases} x=1 \\ x=\frac{-16}{r} \end{cases} \Rightarrow \text{اختلاف بينهما: } 1 - \left(\frac{-16}{r}\right) = \frac{16}{r} \checkmark$$

15

$$\log \frac{V}{r} = 0,8 = \frac{\log V}{\log r} = 0,8 \Rightarrow \log V = 0,8 \log r$$

$$20 \log \frac{r}{\omega} = 0,2 = \frac{\log r}{\log \omega} = 0,2 \Rightarrow \log \omega = 2 \log r$$

$$\log r + \log \omega = \log 10 = 1 \Rightarrow 2 \log r = 1 \Rightarrow \log r = \frac{1}{2} \Rightarrow \log V = \frac{1}{2} \cdot \frac{1}{2} = \frac{1}{4}$$

$$\log 16 = \log r + \log V = \frac{1}{2} + \frac{1}{4} = \frac{3}{4}$$

25

$$\log \frac{16}{16} = \frac{\log 16}{\log 16} = \frac{1}{\log 16} = \frac{1}{3/4} \checkmark$$

$$\log \frac{\omega}{r} = 1/2 = \frac{\log \omega}{\log r} = 1/2 \Rightarrow \log \omega = 1/2 \log r \Rightarrow \log \omega = \frac{1}{4} \log r$$

$$30 \log \frac{r}{r} = \frac{\log r}{\log r} = 1/4 \Rightarrow \log r = 1/4 \log r \Rightarrow \frac{1}{4} \log r = \log r$$

$$\text{P4YCO } \log r + \log \omega = 1 \Rightarrow \frac{1}{4} \log r = 1 \Rightarrow \log r = 4 \Rightarrow \log \omega = \frac{1}{4} \Rightarrow \log r = \frac{1}{4}$$

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

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

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

$$\log_{\Lambda} 1\Lambda = m \Rightarrow \log_{r'r} 1\Lambda = m \Rightarrow \frac{1}{r'} \log_{r'} 1\Lambda = m \Rightarrow \log_{r'} 1\Lambda = r'm$$

$$\log_{r'} r + \log_{r'} 1 = r'm \Rightarrow 1 + \log_{r'} r = r'm \Rightarrow 1 + r \log_{r'} r = r'm$$

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

$$\log_{\frac{r}{r'}} r' = \log_{\frac{r}{r'}} r + \log_{\frac{r}{r'}} r' = \log_{r'} r + 1 = \frac{1}{r} (\log_{r'} r + 1)$$

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

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

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

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

$$\log_{\Lambda} (q_{u+1}) = \log_{\Lambda} r' = \log_{r'r} r' = \frac{r}{r'} \log_{r'} r = \frac{r}{r'}$$

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

$$\Rightarrow \log_{\Lambda} b = \log_{\Lambda} r' \Rightarrow b = r'$$

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

Subject:

Year: Month: Day: ()

page: ()

$$-Ea n^r + b n + \frac{1}{r} C = 0$$

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

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

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

(r)

10

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

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

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

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

$$\lg_{1, \Delta}^q = \frac{\lg_r^q}{\lg_r^{1, \Delta}} = \frac{\lg_r^r + \lg_r^{\Delta}}{\lg_r^r + \lg_r^{\Delta}} = \frac{\frac{\Delta}{n} + 1}{1 + 1, \Delta} = \frac{\frac{1}{n}}{\frac{\Delta}{n}} = \boxed{\frac{1}{\Delta}} \quad -4$$

$$\lg_r^r = \frac{1}{\lg_r^{\Delta}} = \frac{\Delta}{n}$$