

به نام خدا

۲۰

تکلیف شماره ۲۴

و نه حاجی بابا دهن - یازدهم سیر ۱۳

مفردار تابع $f(x) = 3^{Ax+B}$ مفردار تابع $y = 9x^2$ را در دو نقطه به طول های او ۳ قطع می کند پس مفردار تابع f از نقاط $(1, 1)$ و $(3, 9)$ عبور می کند بنابراین

$$f(1) = 1 \Rightarrow 3^{A+B} = 1 \Rightarrow A+B = 0 \Rightarrow B = -A \quad (2) \quad (1)$$

$$f(3) = 9 \Rightarrow 3^{3A+B} = 9 \Rightarrow 3A+B = 2 \Rightarrow 3A-A = 2 \Rightarrow A = 1 \checkmark \Rightarrow B = -1 \checkmark$$

در نتیجه $f(x) = 3^{x-1}$ پس عرض نقطه تلاقی مفردار تابع f با محور y برابر $\frac{1}{3}$ است $f(0) = \frac{1}{3}$ ✓

$$\log_r(r^x + 15) = x + 3 \Rightarrow r^x + 15 = r^{x+3} \Rightarrow (r^x)^2 - 14r^x + 15 = 0$$

$$\Rightarrow (r^x - 5)(r^x - 3) = 0 \Rightarrow \begin{cases} r^x = 5 \Rightarrow x = \log_r 5 \\ r^x = 3 \Rightarrow x = \log_r 3 \end{cases} \quad (2) \quad (7)$$

$$\text{مجموع جواب های معادله} = \log_r 5 + \log_r 3 = \log_r 15 \checkmark$$

$$\log_{r_1} 1^r 2^r = \log_{r_1} 9 \times 16V = \log_{r_1} 9 + \log_{r_1} 16V = r \log_{r_1} 3 + \log_{r_1} 16V$$

$$\Rightarrow (\log_{r_1} 3)^r + \log_{r_1} 16V (r \log_{r_1} 3 + \log_{r_1} 16V)$$

$$= (\log_{r_1} 3)^r + r \log_{r_1} 3 \log_{r_1} 16V + (\log_{r_1} 16V)^r$$

$$= (\log_{r_1} 3 + \log_{r_1} 16V)^r = (\log_{r_1} 48V)^r$$

$$= (\log_{r_1} 21^r)^r = (r \log_{r_1} 21)^r = (r \times 1)^r = r \rightarrow \text{jawab} = r \checkmark$$

$$\log (a^r - r a + 1) + r \log (1 - a) = \Delta \Rightarrow \log (1 - a)^r + r \log (1 - a)$$

$$= r \log (1 - a) + r \log (1 - a) = \Delta \log (1 - a) = \Delta \Rightarrow \log (1 - a) = \frac{\Delta}{r}$$

$$\Rightarrow 1 - a = 10 \Rightarrow a = -9 \Rightarrow \log_{\frac{1}{r}} (-a) = \log_{\frac{1}{r}} 9 = r \checkmark$$

$$\log_{\frac{1}{r}} (a^r + r a + r) + \log_{\frac{1}{r}} (a - r) = r \Rightarrow \log_{\frac{1}{r}} ((a^r + r a + r)(a - r)) = r$$

$$\Rightarrow \log_{\frac{1}{r}} (a^r - 1) = r \Rightarrow a^r - 1 = \Lambda \Rightarrow a^r = 1\Lambda \Rightarrow a = \sqrt[r]{1\Lambda} = r^{\frac{r}{2}}$$

$$\log_{\frac{1}{r}} \frac{a}{\sqrt{r}} = \log_{\frac{1}{r}} \frac{r^{\frac{r}{2}}}{\sqrt{r}} = \frac{\frac{r}{2}}{\frac{1}{r}} \log_{\frac{1}{r}} r = \frac{r}{2} \times r = r \checkmark$$

$$\log (r - a) - \log \frac{1}{(a - r)^r} = r \Rightarrow \log (r - a) + \log (a - r)^r = r$$

$$\Rightarrow \log (r - a) + r \log |a - r| = r \xrightarrow{a < r} \log (r - a) + r \log (r - a) = r$$

$$\Rightarrow r \log (r - a) = r \Rightarrow \log (r - a) = 1 \Rightarrow r - a = 10 \Rightarrow a = -\Lambda \checkmark$$

$$\log_{\frac{1}{\sqrt{r}}} (-a) = \log_{\frac{1}{\sqrt{r}}} \Lambda = r \log_{\frac{1}{\sqrt{r}}} \Lambda = r \times r = 4 \checkmark$$

$$A1^{\alpha} = \mu^{\alpha} r^{\alpha} \Rightarrow \mu^{\alpha} = \mu^{\alpha} r^{\alpha} \Rightarrow \alpha = \alpha r - r \Rightarrow \alpha r - r - \alpha = 0$$

$$\Delta = r^2 \rightarrow \alpha_1, \alpha_2 = \frac{r \pm r\sqrt{4}}{r} = r \pm \sqrt{4} \Rightarrow \begin{cases} \alpha_1 = r + \sqrt{4} \checkmark \\ \alpha_2 = r - \sqrt{4} \text{ غير } \end{cases}$$

$$\Rightarrow \log_4(x-r) = \log_4(\sqrt{4} + r - r) = \log_4 \sqrt{4} = \frac{1}{r} \log_4 4 = \frac{1}{r} \checkmark$$

$$\log_3 r = \frac{\omega}{\lambda} \Rightarrow \log_3 r^{\lambda} = \omega$$

$$\log_{18} \lambda = \frac{\log_3 \lambda}{\log_3 18} = \frac{\log_3 \lambda}{\log_3 9 + \log_3 2} = \frac{\lambda}{2 \log_3 2 + 1} = \frac{\lambda}{2 \times \frac{\lambda}{\omega} + 1} = \frac{\omega}{2} \checkmark$$

$$\log_{12} 4 = \frac{\log_3 4}{\log_3 12} = \frac{\log_3 4}{\log_3 3 + \log_3 4} = \frac{0.18 + \frac{1}{r} \log_3 4}{0.18 + 1} = \frac{0.18 + \frac{1}{r}}{1.18} = \frac{1/r}{1.18}$$

$$15 = \frac{13}{18} \checkmark$$

چون a یکی از ریشه های معادله است بنابراین a و b در معادله جایگزین می کنیم

$$(a \log_3 r) a^r + a a + b \log_3 r = 0 \xrightarrow{x=-1} a \log_3 r - a + b \log_3 r = 0$$

$$\log_3 r (a+b) = a \Rightarrow \log_3 r = \frac{a}{a+b} \Rightarrow \log_3 10 = \frac{a+b}{a} = \frac{a}{a} + \frac{b}{a}$$

$$\Rightarrow \log_3 10 = 1 + \frac{b}{a} \Rightarrow \log_3 10 - 1 = \frac{b}{a} \Rightarrow \log_3 10 - \log_3 3 = \log_3 \frac{10}{3} = \frac{b}{a}$$

$$25 \quad (\sqrt{r})^{\frac{b}{a}} = (\sqrt{r})^{\log_3 \frac{10}{3}} = (r^{\frac{1}{2}})^{\log_3 \frac{10}{3}} = r^{\frac{1}{2} \log_3 \frac{10}{3}} = r^{\log_3 \sqrt{\frac{10}{3}}} = \sqrt{10} \checkmark$$