سامان‌باری

14

(1) $f(x)=3^{Ax+B}$ $y=x^2$

$x=1,\ x=3$

$f(1)=1^2=1 \to 3^{A+B}=1 \Rightarrow A+B=0$ 9

$3^{3A+B}=9=3^2 \quad 3A+B=2$

$\boxed{f(0)=3^{A(0)+B}=3^{-1}=\frac{1}{3}}$

$\begin{cases} A+B=0 \\ 3A+B=2 \end{cases}$

$2A=2 \to A=1$

$B=-1$

$\log_2(4^x+15)=x+2 \to 4^x=(2^2)^x=2^{2x}$

$\log_2(2^{2x}+15)=x+3 \to t=2^x \to 2^{2x}=t^2$

$\log_2(t^2+15)=\log_2(2^{x+3})$ 9

$\Rightarrow t^2+15=2^{x+3}=8t \to t^2-8t+15=0$

$(t-3)(t-5)=0$

$\Rightarrow 2^x=3 \Rightarrow x=\log_2^3$ $\boxed{t=3}$ $t=5$

$2^x=5 \Rightarrow x=\log_2^5 \to \log_2^3+\log_2^5=\log_2^{(15)}$

$(\log_{21}^3)^2+\log_{21}^{(147)}\log_{21}^{(1323)}$ $(2-a)(a+2)=4-a^2$

$21=3\times7$ $a=\log_{21}^3$ $a^2+(4-a^2)=4$ 9

$147=3\times7^2$

$1323=3^3\times7^2$ $b=\log_{21}^7$ $\log_{21}(3\times7)=1$

$a+b=1 \to b=1-a$

$\log_{21}^{(147)}=a+2b$

$\log_{21}^{(3^3 \times 7^2)}=3a+2b \to a^2+(a+2b)(3a+2b)$

$a+2b=a+2(1-a)=2-a \quad 3a+2b=3a+2(1-a)=a+2$

سانیا جاربری

11002832

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$3^{3A+B}=9=3^2 \quad 3A+B=2$

$\boxed{F(0)=3^{A(0)+B}=3^{-1}=\frac{1}{3}}$

$\begin{cases} -A+B=0 \\ 3A+B=2 \end{cases}$

$2A=2 \rightarrow A=1$

$B=-1$

$\log_2(4^x+15)=x+2 \rightarrow 4^x=(2^2)^x=2^{2x}$

$\log_2(2^{2x}+15)=x+3 \rightarrow t=2^x \rightarrow 2^{2x}=t^2$

$\log_2(t^2+15)=\log_2(2^{x+3})$

$\Rightarrow t^2+15=2^{x+3}=8t \rightarrow t^2-8t+15=0$

$(t-3)(t-5)=0$

$\Rightarrow 2^x=3 \Rightarrow x=\log_2^3$ $\quad \boxed{t=3} \quad t=5$

$2^x=5 \Rightarrow x=\log_2^5 \rightarrow \log_2^3+\log_2^5=\log_2^{(15)}$

$(\log_{21}^3)^2+\log_{21}^{(147)}\log_{21}^{(1323)}$

$(2-a)(a+2)=4-a^2$

$21=3\times 7$ $\quad a=\log_{21}^3$ $\quad a^2+(4-a^2)=4$

$147=3\times 7^2$ $\quad b=\log_{21}^7$ $\quad \log_{21}(3\times 7)=1$

$1323=3^3\times 7^2$

$a+b=1 \rightarrow b=1-a$

$\log_{21}^{(147)}=a+2b$

$\log_{21}^{(1323)}=3a+2b \rightarrow a^2+(a+2b)(3a+2b)$

$a+2b=a+2(1-a)=2-a \quad 3a+2b=3a+2(1-a)=a+2$

Subject

Scanned with CamScanner

سانیا صابری

$\log(۲-x) - \log \frac{۱}{(x-۲)^۲} = ۳$

$\log_{\sqrt{۲}}^{(-x)} = ?$

$\log(۲-x) + \log((x-۲)^۲) = ۳$

$(x-۲)^۲ = (۲-x)^۲ \to \log(۲-x)^۳ = ۳$ ۶

$۳\log(۲-x) = ۳ \Rightarrow \log(۲-x) = ۱$

$۲-x = ۱۰ \Rightarrow x = -۸$

$\log_{\sqrt{۲}}(-x) = \log_{\sqrt{۲}}^{۸}$ $۸ = ۲^۳$ $\sqrt{۲} = ۲^{\frac{۱}{۲}}$

$۶ = \frac{۳}{۱/۲} = ۶$

$۳^{x^۲-۲} = ۸۱^{x}$

$\log_۶^{(x-۲)}$

$۳^{x^۲-۲} = ۳^{۴x}$ ۶

$x^۲-۲ = ۴x \to x^۲-۴x-۲ = ۰$ $x = ۲ \pm \sqrt{۶}$

$x-۲ > ۰ \Rightarrow x > ۲$ $x = ۲+\sqrt{۶}$

$\log_۶^{(x-۲)} = \log_۶ ۶^{\frac{۱}{۲}} \to \log_۶ ۶^{\frac{۱}{۲}} = \frac{۱}{۲}$

سانیا مادری

$\log_{3} 2 = \frac{5}{8}$ $\qquad \log_{18} 8 = ?$

$a = \log_{3} 2 = \frac{5}{8} \qquad \log_{18} 8 = \frac{\log_3 8}{\log_3 18}$

$\log_3 8 = \log_3 2^3 = 3\log_3 2 = 3a = \frac{15}{8}$

$\log_3 18 = \log_3 (2\times 3^2) = \log_3 2 + 2 = a+2 = \frac{5}{8}+2 = \frac{21}{8}$

$\log_{18} 8 = \frac{\frac{15}{8}}{\frac{21}{8}} = \frac{15}{21} = \boxed{\frac{5}{7}}$

$\log_4 3 = 0/8 = \frac{4}{5} \rightarrow \frac{\log_2 3}{\log_2 4} = \frac{\log_2 3}{2} = \frac{4}{5}$

$\log_{12} 6$ $\qquad \log_2 3 = \frac{8}{5}$

$\log_{12} 6 = \frac{\log_2 6}{\log_2 12} \rightarrow \log_2 6 = \log_2 (2\times 3) = 1+\log_2 3 = 1+\frac{8}{5} = \frac{13}{5}$

$\log_{12} 6 = \frac{\frac{13}{5}}{\frac{18}{5}} = \boxed{\frac{13}{18}}$

$(a\log 2)x^2 + ax + b\log 2 = 0 \qquad x=-1 \qquad (\sqrt{2})^{\frac{b}{a}} = ?$

$(a\log 2)(1) + a(-1) + b\log 2 = 0 \qquad a\log 2 - a + b\log 2 = 0$

$(a+b)\log 2 - a = 0 \qquad (\sqrt{2})^{\frac{b}{a}} = 2^{\frac{1}{2}\left(\frac{1}{\log 2}-1\right)}$

$(a+b)\log 2 = a$

$(1+\frac{b}{a})\log 2 = 1 \qquad \log_{10}(2)^{-1} = \log_2 10$ $\quad 2-1$

$1+\frac{b}{a} = \frac{1}{\log 2} \rightarrow \frac{b}{a} = \frac{1}{\log 2} - 1 \qquad (\sqrt{2})^{\frac{b}{a}} = (2^{\frac{1}{2}})^{\log_2 5}$

$\boxed{2^{\frac{1}{2}\log_2 5} = \sqrt{5}}$