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

16,5

نقاط تلاقی ← (1,1) (2,9)

$x=1 \to A+B=0$
$x=2 \to 2A+B=2$ $\Big\} \to A=1, B=-1$

$x=0 \to 2^B = 2^{-1} = \frac{1}{2}$ ✓ (2)

$x=1 \to 2^{A+B} = 1 = 2^0 \to A+B=0$
$x=2 \to 2^{2A+B} = 4 = 2^2 \to 2A+B=2$

$2^{x+2} = 2^x + 12 \to 2^{x+2} - 2^{2x} = 12 \to 2^{2x}(4-2^x) = 12 \xrightarrow{2^x=t} t(4-t)=12 \to$

$\to t^2 - 4t + 12 = 0 = (t-6)(t-2) \to 2^x = 2, 2^x = 6$ (2)

$2^x = 2 \to \log_2^2 = x$ جواب اول
$2^x = 6 \to \log_2^6 = x$ جواب دوم
$\Big\} \Rightarrow \log_2^6 + \log_2^5 = \log_2^{6\times5} = \log_2^{30}$ ✓

$x^2 + 2x + 1 = (1-x)^2 \to 4\log(1-x)^2 + 3\log(1-x) = 6 \to$

$\to 2\log(1-x) + 3\log(1-x) = 6 = 6\log(1-x) \to \log(1-x) = 1 \to$

$\to 1-x = 10 \to x = -9$ ✓ $\to \log_3^{(-x)} = \log_3^9 = 2$ ✓ $= \log_3^{3^2} = 2\log_3^3$ (2)

$3 = \log_2^{(x^3+2x+6)(x-2)} = \log_2^{(x^3-1)} \to 2^3 = x^3 - 1 \to x^3 = 16 \to x = \sqrt[3]{16}$

$\to x = 2^{\frac{4}{3}} \Rightarrow \log_{\sqrt[3]{2}}^x = \log_{2^{\frac{1}{3}}}^{2^{\frac{4}{3}}} = \frac{\frac{4}{3}}{\frac{1}{3}}\log_2^2 = 4$ ✓ (2)

$(\log_{21}^3)^2 + (\log_{21}^7 + \log_{21}^3)(\log_{21}^{21^2} + \log_{21}^3) = (\log_{21}^3)^2 + (1+\log_{21}^7)(2+\log_{21}^3)$ (1,5)

$(x-2)=t$ → عبارت $= \log(-t) - (\log 1 - \log(t)^2) = \log(-t) + \log(t^2) - \log 1$

$= \log(-t^3) = 3 = 3\log -t \rightarrow \log -t = 1 \rightarrow t = -10 \rightarrow x-2 = -10 \rightarrow$ صفر

$\rightarrow x = -8$ ✓ $\rightarrow \log_{\sqrt{2}} \frac{(-x)}{\sqrt{2}} = \log_{2^{\frac{1}{2}}} 2^3 = \frac{3}{\frac{1}{2}} \log_2^4 = 6$ ✓

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$3^{2x^2-4} = 81^x \rightarrow 3^{2x^2-2} = (3^4)^x = 3^{4x} \rightarrow x^2 - 2 = 4x \rightarrow x^2 - 4x - 2 = 0$

$x = \frac{4 \pm \sqrt{24}}{2}$ ← $2-\sqrt{6}$ جلوی لوگ منفی ✗ غ ق $\Rightarrow x = 2+\sqrt{6}$ ← $2+\sqrt{6}$ ق ✓

$\rightarrow \log_4^{(x-2)} = \log_4^{\sqrt{6}} = \log_4^{6^{\frac{1}{2}}} = \frac{1}{2}\log_4^6 = \frac{1}{2}$ ✓

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$\log_{18}^8 = \frac{1}{\log_8^{18}} \rightarrow \log_1^{18} = \log_{2^2}^{2^3 \cdot 3^2} = \frac{3}{2}\log_2^2 + \frac{2}{2}\log_3^3 = \frac{3}{2} + 1 =$

$= \frac{14}{10} + \frac{1}{2} = \frac{21}{10} = \frac{7}{5} \rightarrow \frac{7}{5} = \log_8^{18} \Rightarrow \log_{18}^8 = \frac{1}{\frac{7}{5}} = \frac{5}{7}$ ✓

$\log_{2^2}^{3^2} = \frac{1}{2}\log_2^3 = \frac{1}{2}$ ، $\log_3^2 = \frac{1}{\log_2^3} = \frac{1}{\frac{5}{2}}$ توضیح محاسبات

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$\log_4^{36} = 1.1 = \log_4^{\frac{12}{2}} = \log_4^{12} - \log_4^4 \rightarrow \log_4^{12} - 1 = 0.1 \rightarrow \log_4^{12} = 1.1$

$\log_4^6 = 0.1 = \log_4^{\frac{4}{2}} = \log_4^4 - \log_4^2 = \log_4^4 - \frac{1}{2}\log_4^4 \rightarrow \log_4^4 - \frac{1}{2} = 0.1 \rightarrow$

$\rightarrow \log_4^4 = 1.6 \Rightarrow \frac{\log_4^4}{\log_4^{12}} = \log_{12}^4 = \frac{1.6}{1.1} = \frac{16}{11}$ ✓

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$a\log 2 - a + b\log 20 \rightarrow a\log 2 + b\log 2^2 = a$

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۳-

$$(\log_{۲۱}^{۳})^{۲} + \log_{۲۱}^{۷\times۳} \log_{۲۱}^{۷۳\times۳} = (\log_{۲۱}^{۳})^{۲} + (\log_{۲۱}^{\frac{۲۱}{۳}} + ۱)(\log_{۲۱}^{۷۳^{۲۱\times۳}} + ۱)$$

$$(\log_{۲۱}^{۳})^{۲} + (۱ - \log_{۲۱}^{۳} + ۱)(۱ + \log_{۲۱}^{۳} + ۱) =$$

$$(\log_{۲۱}^{۳})^{۲} + (۲ - \log_{۲۱}^{۳})(۲ + \log_{۲۱}^{۳}) = (\log_{۲۱}^{۳})^{۲} + ۴ - (\log_{۲۱}^{۳})^{۲} = \boxed{۴}$$

۱۰-

$$x = -۱ \rightarrow a\log ۲ - a + b\log ۲ = ۰$$

$$b\log ۲ = a(۱ - \log ۲)$$

$$b\log ۲ = a\log ۵ \rightarrow \frac{b}{a} = \frac{\log ۵}{\log ۲} = \log_{۲}^{۵}$$

$$(\sqrt{۲})^{\log_{۲}^{۵}} = ۵^{\log_{۲}^{\sqrt{۲}}} = ۵^{\frac{۱}{۲}} = \boxed{\sqrt{۵}}$$