نام و نام خانوادگی ...علی فضل الهی... پاسخنامه تشریحی تکلیف شماره ...۲۴... کلاس ...یازدهم تجربی B...

| | |
|---|---|
| $f(x)=3^{Ax+B}$   $f(1)=g(1) \Rightarrow 3^{A+B}=1=3^0 \Rightarrow A+B=0$ <br> $g(x)=x^2$   $f(3)=g(3) \Rightarrow 3^{3A+B}=3^2 \Rightarrow 3A+B=2$ <br> $f(x)=3^{x-1} \Rightarrow f(0)=3^{-1}=\frac{1}{3}$ | ۱ |
| $\log_2(4^x+15)=x+3 \Rightarrow 4^x+15=2^{x+3}$ <br> $(2^2)^x+15=2^x\times 2^3 \Rightarrow (2^x)^2+15=8\times 2^x$   $2^x=m$ <br> $m^2+15=8m \Rightarrow m^2-8m+15=0 \Rightarrow (m-3)(m-5)=0$ $\begin{cases} m=3 \\ m=5 \end{cases}$ <br> $m=3 \Rightarrow 2^x=3 \Rightarrow \log_2 2^x=\log_2 3 \Rightarrow x=\log_2 3$ <br> $m=5 \Rightarrow 2^x=5 \Rightarrow \log_2 2^x=\log_2 5 \Rightarrow x=\log_2 5$ <br> مجموع جواب ها $=\log_2 3+\log_2 5=\log_2 15$ | ۲ |
| $147=3\times 7^2=\frac{21^2}{3}$   $1323=3^3\times 7^2=3\times 21^2$ <br> $\log_{21}147=\log_{21}\frac{21^2}{3}=\log_{21}21^2-\log_{21}3=2-\log_{21}3$ <br> $\log_{21}1323=\log_{21}21^2\times 3=\log_{21}21^2+\log_{21}3=2+\log_{21}3$ <br> $(\log_{21}3)^2+(2-\log_{21}3)(2+\log_{21}3)=(\log_{21}3)^2+(4-(\log_{21}3)^2)=4$ | ۳ |
| $\log(x^2-2x+1)+3\log(1-x)=5$ <br> $x^2-2x+1=(x-1)^2 \Rightarrow \log((x-1)^2)+3\log(1-x)=5$ <br> $1-x>0 \quad x<1 \longrightarrow (x-1)^2=(1-x)^2$ <br> $\log((1-x)^2)+3\log(1-x)=5 \Rightarrow \log((1-x)^2)=2\log(1-x)$ <br> $2\log(1-x)+3\log(1-x)=5 \Rightarrow 5\log(x-1)=5 \Rightarrow \log_{10}(1-x)=1$ <br> $1-x=10 \quad x=-9 \Rightarrow \log_3^{-x}=\log_3 9=2$ | ۴ |
| $\log_2(x^2+2x+4)+\log_2(x-2)=3 \Rightarrow \log_2(x-2)(x^2+2x+4)=3$ <br> $\Rightarrow \log_2(x^3-8)=3 \Rightarrow x^3-8=2^3 \Rightarrow x^3=2^3+8=16$ <br> $\Rightarrow x=\sqrt[3]{16}$   $\log_{\sqrt{2}}\sqrt[3]{16}=\log_2 16=4$ | ۵ |

عارف مقبل الهی

$$\log(2-x) - \log\frac{1}{(x-2)^2} = 3$$

دامنه $\begin{cases} 2-x>0 & 2>x \\ (x-2)^2>0 & 2>x \end{cases}$

براساس خواص log $\Rightarrow$ $\log\dfrac{(2-x)}{\dfrac{1}{(x-2)^2}} = 3 \Rightarrow \log(2-x)^3 = 3$ ۶

$(2-x)^3 = 10^3 \Rightarrow 10 = 2-x \Rightarrow x=-8$ $\quad \log_{\sqrt{2}}^{(-x)} \Rightarrow \log_{\sqrt{2}}^{8} = \log_{2^{\frac{1}{2}}}^{2^3}$

$= 6\log_2^2 = \boxed{6}$

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$3^{x^2-2} = 81^x \Rightarrow 3^{x^2-2} = 3^{4x}$ $\qquad \log_6^{x-2}$ دامنه $x-2>0$, $x>2$

$x^2-2=4x \Rightarrow x^2-4x-2=0$ (I) $\qquad$ از دامنه رد و خارج $x<0$

می دانیم $(x-2)^2 = x^2-4x+4$ (II) ۷

حالا (I) را برحسب (II) می نویسیم برای محاسبه راحت تر $\Rightarrow x^2-4x-2 = (x-2)^2-6$ (III) $\qquad$ غ ق ق $\qquad \log_6^{2+\sqrt{6}-2} =$

(I), (II), (III) $\Rightarrow (x-2)^2-6=0 \qquad (x-2)^2=6 <$ $x-2=-\sqrt{6}$, $x=2-\sqrt{6}$ ; $x-2=+\sqrt{6}$, $x=2+\sqrt{6}$ ق ق $\qquad \log_6^{\sqrt{6}} = \boxed{\frac{1}{2}}$

[illegible]

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$\log_{18}^{8} = \dfrac{\log_2^8}{\log_2^{18}}$ ← براساس خواص log $\qquad \log_2^8 = \log_{2^1}^{2^3} = 3$

$\log_2^{18} = \log_2^2 + \log_2^9 = 1 + 2\log_2^3$

$\log_3^2 = \frac{5}{8} \xrightarrow{\text{براساس خواص log}} \log_2^3 = \frac{8}{5}$ $\qquad \log_{18}^8 = \dfrac{\log_2^8}{\log_2^{18}} = \dfrac{3}{1+2(\frac{8}{5})} = \dfrac{3}{\frac{21}{5}} = \dfrac{3\times5}{21}$ ۸

$= \boxed{\frac{5}{7}}$

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$\log_{12}^{6} = \dfrac{\log_4^6}{\log_4^{12}}$

$\log_4^6 = \log_4^2 + \log_4^3 = \log_{2^2}^{2} + \log_4^3 = \frac{1}{2} + 0/8 = \frac{13}{10}$ ۹

$\log_4^{12} = \log_4^4 + \log_4^3 = 1 + 0/8 = \frac{18}{10}$ $\qquad \dfrac{\frac{13}{10}}{\frac{18}{10}} = \boxed{\frac{13}{18}}$

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$ax^2+bx+c=0 \Rightarrow x_1=-1 \Rightarrow a+c=b$

$(a\log 2)x^2 + ax + b\log 2 = 0$

$a\log 2 + b\log 2 = a \Rightarrow b\log 2 = a - \log 2$ ۱۰

$b\log 2 = a(1-\log 2) \Rightarrow \frac{b}{a} = \dfrac{1-\log 2}{\log 2} = \dfrac{\log 10 - \log 2}{\log 2} = \dfrac{\log\frac{10}{2}}{\log 2} = \dfrac{\log 5}{\log 2}$

[illegible] براساس خواص log $\qquad = \log_2^5$

$(\sqrt{2})^{\frac{b}{a}} = (\sqrt{2})^{\log_2^5} = 5^{\log_2^{\sqrt{2}}} = 5^{\frac{1}{2}\log_2^2} = 5^{\frac{1}{2}} = \boxed{\sqrt{5}}$