تا مساوی

۱-

$3^{A+B} = 1 \rightarrow A+B = 0$

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

$2A = 2$

$A = 1$

$B = -1$

$3^{x^{3}-1} = 3^{-1} \rightarrow \frac{1}{3}$

۲-

$\log_2(4^x+15) = x+3$

$(2)^{x+3} = 4^x + 15$

$2^x \times 2^3 = 2^{2x} + 15$

$A \qquad A^2$

$A^2 - 8A + 15 = 0$

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

$\swarrow 5 \qquad \swarrow 3$

$2^x = 5 \qquad 2^x = 3$

$\log_2 5 = x$

$\log_2 3 = x$

$\log_2 3$

$\log_2 3 + \log_2 5 = \log_2 15$

۳-

$\log_{21}3 \times \log_{21}4 + \log_{21}^{21\times 7} * \log_{21}^{21^2\times 3^3}$

$(\log_{21}3)^2 + [\log_{21}21 + \log_{21}7] + [?\log_{21}21 + \log_{21}3]$

$(\log_{21}3)^2 + [1 + \log_{21}7] + [2 + \log_{21}3]$

جواب ۴

$\log_{21}7 = \log_{21}\frac{21}{3} = 1 - \log_{21}3 = \log_{21}7$

$\rightarrow (2-\log_{21}3)(2+\log_{21}3) + (\log_{21}3)^2 = 4$

$\log (x-1)^2 + \log (1-x)^2 = 0$

$\log (x-1)^{-2} = \log 10^0$

$x - 1 = -10 \rightarrow x = -9$

$\log_2 (x+4)(x-1) = \log_2 7$

$(x+4)(x-1) = 7$

$x^2 + 3x - 4 = 7$

$x^2 + 3x - 11 = 0 \rightarrow x = \frac{-3 \pm \sqrt{9+44}}{2}$

$\log_{2^{1/2}} 7 = \frac{\frac{1}{2}}{\frac{1}{2}} = 4$

$\log \frac{x-2}{\frac{1}{(x-2)^2}} = \log 1000$

$(x-2)^3 = 1000$

$\log (x-2)^{-3} = \log 10^{-1}$

$x - 2 = 10 \rightarrow x = 12$

۷ - تمارین

$3^{x^2-2} = 3^{2x}$

$x^2 - 2 = 2x$

$x^2 - 2x - 2 = 0$

$(x-1)^2 - 3 = 0$

$|x-1|^2 = 3$

$x - 1 = \sqrt{3}$

$\log_{\sqrt{3}}^{x-1} = \frac{1}{2}$

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۸ -

$\frac{\log 8}{\log 16} = \frac{3}{\log_2^3 + \log_2^1} = \frac{3 \times 2}{12} = \frac{3}{6}$

$2 \log_2^{\frac{3}{5}} = \log \frac{16}{\omega}$

۹

$\frac{\log 6}{\log 12} = \frac{\log 2^{\frac{1}{2}} + \log 3^{\frac{1}{2}}}{\log 4 + \log 3} \rightarrow \frac{1.2}{1.8}$

گزینه ۱۳

-۱.

$x_1 = -1 \quad , \quad \frac{c}{a} = x_1 x_2 = \frac{b \log 2}{a \log 2} = \frac{b}{a} \rightarrow x_2 = -\frac{b}{a}$

$\longrightarrow \begin{matrix} x_1 = -1 \\ x_2 = -\frac{b}{a} \end{matrix} \longrightarrow x_1 + x_2 = -1 - \frac{b}{a}$

$-1 - \frac{b}{a} = x_1 + x_2 = \frac{-a}{a \log 2}$

$-1 - \frac{b}{a} = \frac{-1}{\log 2} \rightarrow 1 + \frac{b}{a} = \frac{1}{\log 2}$

$\frac{b}{a} = 1 - \frac{1}{\log 2} \rightarrow \frac{b}{a} = \frac{1 - \log 2}{\log 2} = \frac{\log 5}{\log 2}$

$$\boxed{\frac{b}{a} = \log_2^5}$$

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

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

$\longrightarrow$ $\sqrt{5}$

ala.