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

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$n=1$
$n=2$ $\longrightarrow$ $n^2 = 3^{An+B}$

$1 = 3^0 = 3^{A+B} \rightarrow A+B=0$
$9 = 3^2 = 3^{2A+B} \rightarrow 2A+B=$ $\Big\}$ $A=1$, $B=-1$

$f(n) = 3^{n-1}$

$\xrightarrow{n=0}$ $3^{-1} = \frac{1}{3}$

۲

$\log_3(\varepsilon^n+10) = n+2$ $\quad 3^{n+2} = \varepsilon^n + 18$

$3^n = t \rightarrow t^2 - 9t + 18 = 0$

$(t-6)(t-3) = 0$
6 3

$3^n = 3 \quad n = \log_3 3$
$3^n = 6 \quad n = \log_3 6$ $\Rightarrow$ مجموع $= \log_3 18$

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$(\log_{21} 3 + \log_{21} 7)(\log_{21} 3 + \log_{21} 7) + (\log_{21} 7)^2$
۱ ۲

$= 2 + \log_{21}^2 7 + 2\log_{21} 7 + \log_{21} 3 \log_{21} 7 + \log_{21}^2 7 = 2 + (\log_{21} 7 + \log_{21} 3) + \log_{21} 7 + \log_{21} 7 (\log_{21} 7 + \log_{21} 3)$
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$2+1+1 = 4$

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

تابان ✓ $n-1$
$-n+1$ ✓

$\rightarrow 2\log(1-n) + 2\log(1-n) = 0 \Rightarrow 4\log(1-n) = 0$ ۱ $\quad 1-n=1 \quad n=0$

$-n = 9 \rightarrow \log_3 9 = 2$

۵

$\log_2 (n-2)(n^2+2n+4) = 3 \Rightarrow n^3 - 8 = 8 \Rightarrow n^3 = 16 \Rightarrow n = \sqrt[3]{16}$

$\log_{\sqrt[3]{2}} \sqrt[3]{16} = 4$

$-\log \frac{1}{a} = +\log a$ $\log(2-x) + \log(x-2)^2 = 3$ توان ۲ ← $x-2 \to -x+2$ $\log(2-x) + 2\log(2-x) = 3$ $\log(2-x) = 1 \to 2-x = 10 \quad x = -8$ $\log_{\sqrt{2}} 8 = \log_{2^{\frac{1}{2}}} 2^3 = 6$	۶
$3^{x^2-2} = 3^{4x}$ $x^2 - 4x - 2 = 0$ $\frac{4 \pm 2\sqrt{6}}{2} = 2+\sqrt{6}$ ✓ $\to \log_6 \sqrt{6} = \frac{1}{2}$ $2-\sqrt{6}$ ✗ <0 در مبنا log نیست	۷
$\frac{\log 2}{\log 3} = \frac{5k}{8k}$ $\frac{3\log 2}{2\log 3 + \log 2} = \frac{15k}{16k+5k} = \frac{15}{21} = \frac{5}{7}$	۸
$\frac{\log a}{2\log 2} = \frac{8}{10} = \frac{8k}{5k}$ $\frac{\log 3 + \log 2}{2\log 2 + \log a} = \frac{8k+5k}{10k+8k} = \frac{13}{18}$ ≈ ۷۲٪ ...	۹
$\xrightarrow{x=-1} a\log 2 - a + b\log 2 = 0 \quad (a+b)\log 2 = a \to \frac{a+b}{a} = \frac{1}{\log 2}$ $\Rightarrow 1 + \frac{b}{a} = \frac{1 - \log 2}{\log 2} = \log_2 5 \Rightarrow \frac{b}{a} = \log_2 5$ $(2^{\frac{1}{2}})^{\log_2 5} = 2^{\log_2 \sqrt{5}} = \sqrt{5}^{\log_2 2} = \sqrt{5}$	۱۰