یازدهم تجربی C — تکلیف ۲۴ — 14 — نیلوفر شهپر

۱

$y=x^2 \to (1,1)$ و $(3,9)$

3^{Ax+B} → ابتدا ۱ → $3^{A+B}=1 \to A+B=0$

→ برهم ۳ → $3^{3A+B}=9 \to 3A+B=2$

$2A=2$, $\boxed{A=1}$, $\boxed{B=-1}$

اثر صفر برهم → $3^{-1}=\boxed{\frac{1}{3}}$

۲

$\log_{b^2}^{(4^x+15)} = x+3 \to 2^{x+3} = 4^{x+15} \to 2^{x+3} = 2^{2x+30} \to x+3 = 2x+30 \to \boxed{x=-27}$

۳

$(\log_{21}^{3})^2 + 2(\log_{21}^{(147)}) \times \log_{21}^{(1323)} = \ldots$ $\qquad \log_{21}^{3}=a \quad \log_{21}^{7}=1-a$

$\log_{21}^{3}+\log_{21}^{7}+\log_{21}^{7} \qquad \log_{21}^{7}+\log_{21}^{3}+\log_{21}^{7}+\log_{21}^{3}+\log_{21}^{3}$

$\frac{a+2-2a}{(2-a)} \qquad \frac{3a+2-2a}{(a+2)} \longrightarrow (2+a)(2-a) = (4-a^2)+(a^2) = \boxed{4}$

۴

مقدار $? = \log_{3}^{(-x)}$

$\log_{10} x^2-2x+1 + 3\log_{10}^{(1-x)} = 5$

$\log_{10}^{(1-x)^2} = 2\log_{10}^{1-x} + 3\log_{10}^{1-x} = 5 \to 5\log_{10}^{1-x} = 5 \to 1-x=10 \to \boxed{x=-9}$

$\log_{3}^{+9} = 2\log_{3}^{3} = \boxed{2}$

۵

$\log_{2}^{(x^2+2x+4)} + \log_{2}^{(x-2)} = 3 \longrightarrow ? = \log_{\sqrt[3]{2}}^{x}$

$(x^2+2x+4)(x-2)=8$

$x^3-2x^2+2x^2-4x+4x-8=8$

$x^3=16 \to \log_{\sqrt[3]{2}}^{x} = 3\log_{2}^{x} \to \log_{2}^{x^3} = \log_{2}^{16} = 4\log_{2}^{2} = \boxed{4}$

۶

$\log^{(2-x)} - \log\frac{1}{(x-2)^2} = 3 \longrightarrow \frac{2-x}{\frac{1}{(x-2)^2}} = (2-x)^3 = 1000 \qquad (x-2)^2=(2-x)^2$

$2-x=10$

$\boxed{x=-8} \longrightarrow \log_{\sqrt{2}}^{(-x)} = 2\log_{2}^{8} = 2\log_{2}^{2^3}$

$2x-4-x^2+2x$

$(x^2+4-4x)(2-x)$ $\qquad \boxed{6} = 6\log_{2}^{2}$

$2x^2-x^3+8-4x-8x+4x^2=1000 \longrightarrow 6x^2-x^3-12x+8=1000$

۷) $3^{x^2-2} = 81^x$ — $? = \log_6^{(x-4)}$

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

$x^2-4x-2=0 \rightarrow x = \frac{4+2\sqrt6}{2} \rightarrow 2+\sqrt6$ ق ق

$\Delta = 16 + \underbrace{4(-2)(1)}_{-8} = +24$, $\quad \frac{4-2\sqrt6}{2} \rightarrow 2-\sqrt6$ غ ق ق

$\rightarrow \log_6^{\sqrt6} = \frac12 \log_6^6 = \boxed{\frac12}$

(۲)

۸) $\log_3^2 = \frac58$ — $\log_{18}^8 = ?$

$$\log_{18}^8 = \frac{\log_3^8}{\log_3^{18}} = \frac{\log_3^2+\log_3^2+\log_3^2}{\underbrace{\log_3^2+\log_3^3+\log_3^3}_{2+\frac58 \rightarrow \frac{16}{8}+\frac58}} = \frac{\frac{15}{8}}{\frac{21}{8}} = \boxed{\frac{15}{21}}$$

(۲)

۹) $\log_4^3 = 0.8$ — $\log_{12}^6 = ?$

$\downarrow$

$\log_{2^2}^3 = \frac12 \log_2^3 = 0.8$, $\quad \underbrace{\quad}_{\log_2^3 = 1.6}$

$$\log_{12}^6 = \frac{\log_4^6}{\log_4^{12}} = \frac{\frac12\log_2^6}{\frac12\log_2^{12}} = \frac{\log_2^6}{\log_2^{12}} = \frac{\log_2^2+\log_2^3}{\log_2^2+\log_2^2+\log_2^3} = \frac{1+1.6}{2+1.6} \rightarrow \boxed{\frac{2.6}{3.6}} = \frac{\frac{26}{10}}{\frac{36}{10}} = \boxed{\frac{26}{36}}$$

$\frac{26}{36} = \boxed{\frac{13}{18}}$

(۲)

۱۰) $(a\log 2)x^2 + ax + b\log 2 = 0$ ← ریشه (یکی از ریشه‌ها) $= -1$

$a\log_{10}^2 - a + b\log_{10}^2 = 0$ ← $(a+b)\log_{10}^2 = a$

$\frac{a}{a+b} = \log_{10}^2 \rightarrow$

$(\sqrt2)^{\frac ba}$

$\downarrow$

$2^{\frac12(\frac ba)}$

$2^{(\frac{b}{2a})} =$

(۴)

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

$\rightarrow a\log 5 = b\log 2 \rightarrow \frac ba = \log_2^5 \rightarrow (\sqrt2)^{\log_2^5} = \sqrt5$

۲) $4^x + 15 = 2^{x+3} \xrightarrow{2^x = t} t^2 - 8t + 15 = 0$

$t=3 \rightarrow x_1 = \log_2^3$ $\quad\quad x_1 + x_2 = \log_2^{15}$

$t=5 \rightarrow x_2 = \log_2^5$

[illegible]