ملیکا محمدحسینی

۲۰

(1)

$y = x^2$ $\quad 3^{A+B} = 1 \quad 3^{2A+B} = 9$

$f(x) = 3^{Ax+b} \quad 3^A \times 3^B = 1 \quad 3^{2A} \times 3^B = 9$

$\dfrac{3^{2A} \times 3^B}{3^A \times 3^B} \to \dfrac{(3^A)^2}{3^A} = 9 \to 3^A = 3^2 \to A = -1$

(۳)

$3^{x-1} \to f(x) = \dfrac{1}{3}$

---

(2)

$\log_2^{4^x+15} = 2x+3 \to 15 + 4^x = 2^{2x+3} \to 15 + 2^{2x} = 2^3 \cdot 2^{2x}$

$S = 2^x \to S^2 - 8S + 15 = 0$ ⟨ $S_1 = 3$, $S_2 = 5$

(۴)

$2^x = 3 \to \log_2^3 \qquad S_1 + S_2 = \log_2^{15}$

$2^x = 5 \to \log_2^5$

---

(3)

$(\log_{21}^3)^2 + \underbrace{\log_{21}^{147}}_{x} \quad \underbrace{\log_{21}^{1323}}_{y}$

(۴)

$2y + x = 147 \to 2 - 2x + x = 2 - x$

$3x + 2y = 1323 \to 3x + 4 - 2x = x + 2$

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

---

(5)

$\log_2^{(x^2-2x+1)} + \log_2^{x-2} = 3 \to \log(x^2-2x+1)(x-2) = 3$

(۴)

$x^3 = 16 \to x = \sqrt[3]{16} \qquad \log_{\sqrt[3]{2}}^{\sqrt[3]{16}} = \boxed{4} \qquad 4 \log_2^2 = 4$

$۳\log^{۱-m} + \log^{(m^۲-۲m+۱)} = ۵$

$\log^{(m-۱)^۲} + \log^{(m-۱)^۳} = ۵ \longrightarrow ۵\log^{-(m-۱)} = ۵$

$-m+۱ = ۱ \longrightarrow m = -۹ \longrightarrow \log_{۳}^{۹} = ۲$

$\log(۲-m) - \log\frac{۱}{(m-۲)^۲} = ۲\log(۲-m)^{۳} = ۳$

$۲-m = ۱ \longrightarrow m = -۱ \longleftrightarrow ۲\log_{۲}^{۱} = ۹$

$\log_{۹}^{m-۵} = ?, \quad ۳^{m^۲-۲} = ۸۱^{m} = ۳^{۴m} \longrightarrow m^۲ - ۴m - ۲۱ = ۰$

$m = ۲ \pm \sqrt{۱۶} \begin{cases} \frac{۱}{۲} \\ \log_{۹}^{۲-\sqrt{۶}-۲} \longrightarrow \text{غ ق ق} \end{cases}$