۲۰

(۱) $x^2 = 2^{Ax+B} \rightarrow x = 1, 2$

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

$1 = 2^{A+B} \quad (0 = A+B)x-1 \rightarrow$

$2A = 2 \rightarrow A = 1 \rightarrow B = -1$

$f(x) = 2^{x-1} \rightarrow f(0) = \frac{1}{2} \rightarrow (0, \frac{1}{2})$

(۲) $\log_2^{4x+10} = x+2 \quad 4^x + 10 = 2^{2x+2}$

$2^{2x} + 10 = 8 \times 2^x \quad a^2 - 8a + 10 = 0$

$(a-2)(a-5) = 0 \xrightarrow{a} a = 2, 5 \quad 2^x = 2$

$\log_2^x = x \quad / \quad 5 = 2^x \quad \log_2^5 x$

$\log_2^2 + \log_2^5 = \log_2^{10}$

(۳) $\log_{21}^7 = \log_{11}^{11} - \log_{21}^3 \rightarrow \log_{21}^7 = 1 - m$

$m^2 + (2-2m+m)(2-4m+2m) = m^2 - m^2 + 4 = 4$

$2-m \quad m+2$

(۴) $\log^{(1-x)} + \log^{(1-x)} = 5 \quad \log^{1-x} = 1 \rightarrow$

$2 \log + 2 \log = 5 \quad 1-x = 10 \quad x = -9 \rightarrow \log(-(-9))$

$= 2$

(۵) $(x^2+2x+4)(x-2) = x^3 + 2x^2 + 4x - 2x^2 - 4x - 8$

$= x^3 - 8 \quad \log_2^{x^3-8} = 4 \rightarrow x^3 - 8 = 16 \rightarrow x^3 = 24$

Year Month Date ( )

subject

عالی $a = ۲^{\frac{۴}{۳}}$ $\log_{۲^{\frac{۱}{۳}}} ۲^{\frac{۴}{۳}} = \frac{۴}{۳} \times ۳ \log_{۲}^{۲} = ۴$

(۶)

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

$\log^{-(x-۲)^{۳}} = ۳$ $-(x-۲)^{۳} = ۱۰^{۳}$ $x-۲ = -۱۰$

$x = -۸ = -۲^{۳}$ $\log_{۲^{\frac{۱}{۳}}}^{۲^{۳}} = ۳ \times ۳ \log_{۲}^{۲} = ۹$

(۷)

$۳^{x^{۲}-۲} = ۳^{۴x}$ $x^{۲}-۲ = ۴x$ $x^{۲}-۲-۴x = ۰$

$\Delta = b^{۲}-۴ac = ۲۴ = ۲\sqrt{۶}$

$\frac{۴ \pm ۲\sqrt{۶}}{۲} = ۲ \pm \sqrt{۶} \to ۲+\sqrt{۶}$

$\log_{۶}^{۲+\sqrt{۶}-۲} = \log_{۶}^{۶^{\frac{۱}{۲}}} = \frac{۱}{۲} \log_{۶}^{۶} = \frac{۱}{۲}$

(۸)

$\log_{۱۸}^{۸} = \frac{\log_{۳}^{۲^{۳}}}{\log_{۳}^{۱۸}}$ $\log_{۳}^{۲^{۳}} \to ۳\log_{۳}^{۲} \to ۳ \times \frac{۵}{۸} = \frac{۱۵}{۸}$

$\log_{۳}^{۱۸} \to \log_{۳}^{۹} + \log_{۳}^{۲} \quad \frac{۱۶}{۸} + \frac{۵}{۸} = \frac{\frac{۱۵}{۸}}{\frac{۲۱}{۸}} = \frac{۵}{۷}$

(۹)

$\log_{۴}^{۶} \to \log_{۴}^{۳} + \log_{۴}^{۲} \quad (۰/۸) \quad \frac{۱}{۲}\log_{۲}^{۲}$

$\frac{\log_{۴}^{۶}}{\log_{۴}^{۱۲}} = \frac{۰/۸+۰/۵}{۱/۸} = \frac{۱۳}{۱۸}$

$\log_{۴}^{۱۲} \to \log_{۴}^{۴} + \log_{۴}^{۳}$ (۱, $۰/۸$)

subject

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

$b\log^{2} = a - a\log^{2}$ $b\log^{2} = a(1-\log^{2})$

$\frac{b}{a} = \frac{\log^{10} - \log^{2}}{\log^{2}} = \frac{\log^{\omega}}{\log^{2}} = \log^{\omega}_{2}$ (9)

$(\sqrt{2})^{\log^{\omega}_{2}} = \omega^{\log^{\sqrt{2}}_{2}} = \omega^{\frac{1}{2}\log^{2}_{2}} = \omega^{\frac{1}{2}} = \sqrt{\omega}$