یازدهم (دختر)　　　　　　　　　۱۴,۷۵　　　　　　　　　۲۵ -

1- $y = 1 - \log_c (ax-b)$　　$\begin{vmatrix} 0 \\ 2 \end{vmatrix}$　$\begin{vmatrix} -1.5 \\ 0 \end{vmatrix}$　　$b + c = -\frac{3}{2}$

$\rightarrow c > 0 , c \neq 1$ ①

$1 - \log_c^{-b} = 2 \rightarrow \log_c^{-b} = -1 \Rightarrow -b = \frac{1}{c}$　　(5)

$\rightarrow -\frac{1}{c} + c = -\frac{3}{2} \rightarrow \frac{c^2 - 1}{c} = -\frac{3}{2} \xrightarrow{c \neq 0} 2c^2 - 2 = -3c$

$\rightarrow 2c^2 + 3c - 2 = 0 \rightarrow (c+2)(2c-1) = 0$　$c = \frac{1}{2}$, $c = -2$　$\xrightarrow{①}$ $c = \frac{1}{2}$ قق، $c = -2$ غقق

$\Downarrow$

$b = -2$

$\Rightarrow 1 - \log_{\frac{1}{2}}^{-\frac{3}{2}a + 2} = 0 \rightarrow \log_{\frac{1}{2}}^{-\frac{3}{2}a+2} = 1 \Rightarrow -\frac{3}{2}a + 2 = \frac{1}{2} \rightarrow a = 1$

$\Rightarrow (a+c)b = \frac{3}{2} \times (-2) = \boxed{-3}$

2- $f(x) = 1 + c \times 3^{a+bx}$　$\begin{vmatrix} 0 \\ \frac{2}{3} \end{vmatrix}$　$\begin{vmatrix} 1 \\ 0 \end{vmatrix}$

$f(1) = 0 \rightarrow 1 + c \times 3^{a+b} = 0 \Rightarrow c \times 3^{a+b} = -1 \Rightarrow c = -3^{-a-b}$　　(5)

$\Rightarrow f(0) = \frac{2}{3} \rightarrow 1 - 3^{-a-b} \times 3^{a} = \frac{2}{3} \Rightarrow 3^{-b} = \frac{1}{3} \Rightarrow b = 1$

$\Rightarrow f(x) = 1 - 3^{-a-1} \times 3^{a+x} = 1 - 3^{x-1} \Rightarrow f(-1) = 1 - 3^{-2} = \boxed{\frac{8}{9}}$

3-

$y = c + \log_a (ax+b)$　$\begin{vmatrix} 0 \\ 2 \end{vmatrix}$　$\begin{vmatrix} \frac{12}{5} \\ 0 \end{vmatrix}$

$c + \log_a^{b + 2.4a} = 0 \Rightarrow c = -\log_a^{b + \frac{12}{5}a}$　　(5)

$\Downarrow$

$c + \log_a^b = 2 \rightarrow \log_a^b - \log_a^{b + \frac{12}{5}a} = 2 \rightarrow \log_a \frac{b}{b + \frac{12}{5}a} = 2$

$\Rightarrow \frac{b}{b + \frac{12}{5}a} = 2a \rightarrow b = 2ab + 60a$

$\rightarrow -24b = 60a \rightarrow \frac{a}{b} = -\frac{24}{60} = -\frac{4}{10} = -0.4$

Sibo

۴- $f(x) = \log_2(|x^2-2|-x)$

1,75

$|x^2-2|-x>0$

$|x^2-2|>x \begin{cases} x^2-2-x>0 \rightarrow (x-2)(x+1)>0 \rightarrow \begin{array}{c} -1 \quad 2 \\ + \; \cdot \; - \; \cdot \; + \end{array} & (1) \\ x^2-2+x<0 \rightarrow (x+2)(x-1)<0 \rightarrow \begin{array}{c} -2 \quad 1 \\ + \; | \; - \; | \; + \end{array} & (2) \end{cases}$

$(1) \rightarrow x \in (-\infty,-1) \cup (2,+\infty)$

$(2) \rightarrow x \in (-2,1)$

$\xrightarrow{\cap} D_f \in$ ~~(-2,1)~~ $\cup$

$\rightarrow (-\infty,-1) \cup (2,+\infty)$

۵- $f(x) = 2+2^{b-ax}$ $\qquad g(x) = -x^2-3x+8$

$2+2^{b-a} = -1-3+8 = 4$

$\rightarrow 2^{b-a} = 2 \Rightarrow b-a=1$

۲

$f^{-1}(10) = -1 \rightarrow 2+2^{b+a} = 10 \Rightarrow 2^{b+a} = 2^3 \Rightarrow b+a=3$

$\Rightarrow b=2, a=1 \rightarrow 2b-a = 4-1 = 3$

۶- $f(x) = -2+\left(\frac{1}{2}\right)^{Ax+B}$ $\qquad y = x^2-x$

$\rightarrow -2+\left(\frac{1}{2}\right)^{A+B} = 0 \rightarrow 2^{-A-B} = 2^1 \Rightarrow A+B=-1$

$\rightarrow -2+\left(\frac{1}{2}\right)^{2A+B} = 2 \rightarrow 2^{-2A-B} = 2^2 \Rightarrow 2A+B=-2$

۲

$\Rightarrow A=-1, B=0$

$\Rightarrow f(3) = -2+\left(\frac{1}{2}\right)^{-3} = 6$

۷- $1h \to \frac{۸}{۹}x$

① $\log_{۲}^{۵} = ۲,۴ = \log_{۲}^{۱۰} - \log_{۲}^{۵} = ۲,۴ \Rightarrow \log ۲ = \frac{۱۰}{۴۸} = \frac{۵}{۲۴}$ ۰,۲۱

$\to \log_{\frac{۸}{۹}}\frac{۱}{۶} = \log_{۷۲}^{۶} = \frac{\log ۶}{\log ۷۲} \xrightarrow{①,②} \frac{\frac{۵}{۲۴}+\frac{۵}{۱۴}}{\frac{۵}{۸}+\frac{۵}{۷}} = \frac{\frac{۳۸\times۵}{۱۴\times۲۴}}{\frac{۱۵\times۵}{۷\times۸}} = \frac{\frac{۱}{۴۲}}{\frac{۱۵}{۷\times۸}} = \frac{۱۴}{۴۵}$

② $\log_{۳}^{۵} = ۱,۴ \Rightarrow \log_{۳}^{۱۰} = ۲,۸ \Rightarrow \log ۳ = \frac{۵}{۱۴}$

$\frac{۱۴}{\cancel{۴۵}} \times \cancel{۹۶} = \frac{۵۶}{۳}$

۸- $\log_{\frac{۷}{۸}}\frac{۱}{۷} = \log_{۸\times۷}^{۷}$

① $\log_{۳}^{۲} = \frac{۱۰}{۱۴}$ ② $\log_{۳}^{۷} = \frac{۱۰}{۴}$

①,② $\Rightarrow \frac{\log_{۳}^{۲}}{\log_{۳}^{۷}} = \log_{۷}^{۲} = \frac{\frac{۱۰}{۱۴}}{\frac{۱۰}{۴}} = \frac{۳}{۸}$ ۰,۵

$\frac{۱}{\log_{۸\times۷}^{۷}} = \log_{۷}^{۸\times۷} = \log_{۷}^{۸} + \log_{۷}^{۷} = ۳\log_{۷}^{۲} + ۱ = \frac{۹}{۸} + ۱ = \frac{۱۷}{۸}$

$\Rightarrow \log_{۸\times۷}^{۷} = \frac{۸}{۱۷}$ $\boxed{\frac{۸}{۱۷}\times۷ = \frac{۵۶}{۱۷}}$

۹- $\Rightarrow$ ۴٪ $\to$ معکوس

$\log_{۳}^{۲} = \frac{\log ۲}{\log ۳} = \frac{۳}{۴۸} = \frac{۱}{۱۶}$

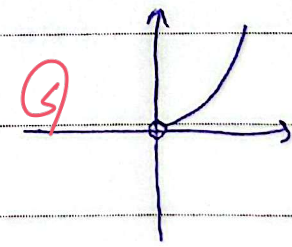
$\log_{۳}^{۵} = \log_{۳}^{۱۰} - \log_{۳}^{۲} = \frac{۱۰}{۴۸} - \frac{۱}{۱۶} = \frac{۷}{۴۸}$ ۵

$\log_{\frac{۲۴}{۲۵}}\frac{۱}{۳} = \log_{۲۴\times۲۵}^{۳} \xrightarrow{معکوس} \log_{۳}^{۵^۲} + \log_{۳}^{۳} + \log_{۳}^{۲^۳}$

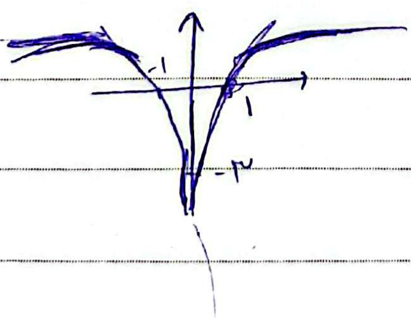
$\frac{۷}{۲۴} + ۱ + \frac{۳}{۱۶} = \log_{۳}^{۲۴\times۲۵} = \frac{۷۱}{۴۸} \xrightarrow{معکوس} \boxed{\frac{۴۸}{۷۱}}$

۱۰-

الف) $y = ۹^{\log_{۳}^{x}} \xrightarrow{x>0} y = x^{\log_{۳}^{۹}} = x^{۲} \to$ ۱



ب) $y = \log x^{۲}$



۷)

$$\left(\frac{۸}{۹}\right)^t = \frac{۱}{۶} \qquad \log\left(\frac{۸}{۹}\right)^t = \log\frac{۱}{۶} \rightarrow t(\log ۸ - \log ۹) = -(\log ۳ + \log ۲)$$

$$\rightarrow t = \frac{-(\log ۲ + \log ۳)}{۳\log ۲ - ۲\log ۳} \qquad \begin{cases} \log_۲^۵ \\ \log_۳^۵ \end{cases} \rightarrow \log_۳^۲ = \frac{۷}{۱۲}$$

$$\div \log ۳ \rightarrow t = \frac{۱۹}{۳} \qquad \frac{۱۹}{۳} \times ۶۰ = ۳۸۰$$

$$۸)\ \left(\frac{۷}{۸}\right)^t = \frac{۱}{۷} \qquad \log_۳\left(\frac{۷}{۸}\right)^t = \log_۳\frac{۱}{۷} \rightarrow t(\log_۳^۷ - \log_۳^۸) = -\log_۳^۷$$

$$t\left(\frac{۱۰}{۶} - ۳\times\frac{۵}{۸}\right) = -\frac{۱۰}{۶} \rightarrow t = ۸ \qquad ۸ \times ۷ = ۵۶$$

$$۹)\ (۰٫۹۶)^n = \frac{۱}{۳} \qquad \log(۰٫۹۶)^n = \log\frac{۱}{۳} \rightarrow n = \frac{-\log ۳}{\log ۹۶ - \log ۱۰۰}$$

$$n = \frac{-\log ۳}{\log(۲^۵ \times ۳) - ۲} = ۲۴$$