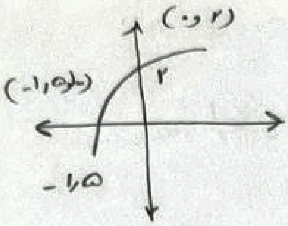

$y = 1 - \log_c(ax - b)$ $\quad b + c = \frac{3}{2}$ $\quad (a+c)b = ?$

$2 = 1 - \log_c(a \cdot 0 - b) \to \log_c(-b) = -1 \to c^{-1} = \frac{1}{c} = -b \to b = -\frac{1}{c}$

$0 = 1 - \log_c(-1.5a - b)$

$-\frac{1}{c} + c = -\frac{3}{2} \to \frac{-1 + c^2}{c} = -\frac{3}{2} \to 2c^2 + 3c - 2 = 0 \to c^2 + 3c - 4 = 0$

$(c+4)(c-1) = 0 \quad c = -\frac{4}{2} = -2, \frac{1}{2}$

$c = \frac{1}{2}, \; b = -2 \quad 1 = \log_{\frac{1}{2}}(-1.5a - b) \to -1.5a + 2 = \frac{1}{2} \to 1.5a = -1.5 \; \boxed{a = -1}$

$(-1 + \frac{1}{2}) \times -2 = -\frac{1}{2} \times 2 = \boxed{+1}$

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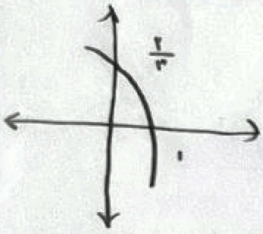
۲)



$(0, \frac{2}{3}) \to \frac{2}{3} = 1 + c \times 3^a$

$\to (1, 0) \to 0 = 1 + c \times 3^{a+b} \Big\} \; \frac{2}{3} = c(3^a - 3^{a+b})$

$\to c = \frac{2}{3(3^a - \underbrace{3^{a+b}}_{3^a \times 3^b})} \to \frac{2}{3^{a+1}(1 - 3^b)} \times 3 \to \frac{2}{3^a(3 - 3^{b+1})} \to \frac{2}{3} = 1 + \frac{2}{3^a(3 - 3^{b+1})} \times 3^a$

$\to -\frac{1}{3} = \frac{2}{(3 - 3^{b+1})} \to 3 - 3^{b+1} = -6 \to b + 1 = 2 \; \boxed{b = 1}$

$f(-1) = 1 + c \times (3^{a-1}) \quad f(1) = 0 = 1 + c \times (3^{a+1}) \to \frac{-1}{y-1} = \frac{\cancel{c} \times 3^{a+1}}{\cancel{c} \times 3^{a-1}}$

$\frac{-1}{y-1} = 9 \to -1 = 9y - 9 \to 9y = 8 \to \boxed{y = \frac{8}{9}}$

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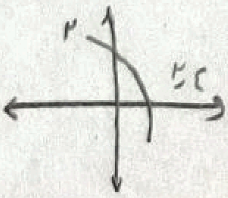
۳)



$(0, 2) \to 2 = c + \log_5 b$

$(2,4) \to 0 = c + \log_5(2.4a + b) \to 2 = \log_5 b - \log_5(2.4a + b) \to 2 = \log_5 \frac{b}{2.4a + b}$

$\frac{25}{1} = \frac{b}{2.4a + b} \to b = 25 \times 2.4a + 25b \to -24b = 25 \times 2.4a \quad \frac{a}{b} = -\frac{10}{25} = \boxed{-\frac{2}{5}}$

شهرزاد شوشتری

۴)

$\log_{۴}(|x^۲-۲|-x)$ $\quad |x^۲-۲|-x>۰ \to |x^۲-۲|>x \to x^۲-۲-x>۰ \to x^۲-x-۲>۰$

$(x-۲)(x+۱)>۰ \to$ $\begin{array}{ccccc} & -۱ & & +۲ & \\ + & \vert & - & \vert & + \end{array}$ $\to (-\infty,-۱)\cup(۲,+\infty)$

$x^۲-۲<-x \to x^۲+x-۲<۰ \to (x+۲)(x-۱)<۰$ $\begin{array}{ccccc} & -۲ & & ۱ & \\ + & \vert & - & \vert & + \end{array}$ $\to (-۲,۱)$

$x^۲-۲<۰ \to x^۲<۲ \to -\sqrt{۲}<x<\sqrt{۲}$

$\xrightarrow{\cap} (-\infty,۱)\cup(۲,+\infty)$

$f(x)=۲+۲^{b-ax}$ $\quad g(x)=-x^۲-۳x+۸ \xrightarrow{x=۱} -۱-۳+۸=\boxed{۴}$

$۴=۲+۲^{b-a} \to ۲=۲^{b-a} \to b-a=۱$

$\xrightarrow{x=-۱} -۱+۳+۸=۱۰$ $\quad ۱۰=۲+۲^{b+a}$ $\quad ۸=۲^{b+a} \to \begin{cases} b+a=۳ \\ b-a=۱ \end{cases}$

$۲b=۴$ $\boxed{b=۲}$ $\boxed{a=۱}$

$f(۲b-a)=۴-۱=\boxed{۳}$

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۶)

$۱-۱=۰$

$x=۱ \to ۰=-۲+\left(\frac{۱}{۲}\right)^{A+B} \to ۲=۲^{-A-B}$

$۴-۲=۲$

$x=۲ \to ۲=-۲+\left(\frac{۱}{۲}\right)^{۲A+B} \to ۲^۲=۲^{-۲A-B} \to \begin{cases} -A-\cancel{B}=۱ \\ -۲A-\cancel{B}=۲ \end{cases}$

$f(۳)=-۲+\left(\frac{۱}{۲}\right)^{-۳} \to -۲+۸=\boxed{۶}$

$-A=۱ \to A=-۱ \quad B=۰$

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۷)

$۱ \xrightarrow{۱h} \frac{۸}{۹} \xrightarrow{۱h} \frac{۷}{۹} \to \left(\frac{۸}{۹}\right)^t=\frac{۱}{۴} \xrightarrow{\log_۵} \log_۵ \left(\frac{۸}{۹}\right)^t=\log_۵ \frac{۱}{۴} \to t\log_۵ \frac{۸}{۹}=\log_۵ \frac{۱}{۴}$

$t(\log_۵ ۸-\log_۵ ۹)=-\log_۵ ۴ \to t\left(۳\times\frac{۱}{\cancel{۲٫۴}}-۲\times\frac{۱}{\cancel{۱٫۴}}\right)=-\frac{۱}{۲٫۴\times۱٫۴}$ $\quad ۰٫۷$

$t\left(\frac{۵}{۴}-\frac{۱۰}{۷}\right)=-\frac{۲۶۴}{۲۲۵} \to t\times\frac{۳۵-۴۰}{۲۸}=-\frac{۲۶۴}{۲۵} \to -۵t=-\frac{۹۵}{۳}$

$t=\frac{۱۹}{۳}\times۶۰=۳۸۰\ \text{min}$

مهرزاد شوشتری

۸)

$$\left(\frac{7}{8}\right)^{\frac{t}{7}} = \frac{1}{7} \xrightarrow{\log_3} \log_3 \left(\frac{7}{8}\right)^{\frac{t}{7}} = \log_3 \frac{1}{7} \to \frac{t}{7} \log_3 \frac{7}{8} = -\log_3 7$$

$$\frac{t}{7}\left(\log_3 7 - 3\log_3 2\right) = -\log_3 7 \to \frac{t}{7}\left(\frac{5}{3} - 3\times\frac{5}{8}\right) = -\frac{5}{3} \to$$

$$\frac{t}{7}\left(\underbrace{\frac{5}{3} - \frac{15}{8}}_{\frac{40-45}{8} = -\frac{5}{8}}\right) = -\frac{5}{3} \to -\frac{\cancel{5}t}{8\times 7} = -\frac{\cancel{5}}{3} \qquad \boxed{t = 56}$$

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۹)

$$100 \to 96 \to 92 \quad \cancel{x_0}\left(\frac{96}{100}\right)^t = \frac{\cancel{x}}{3} \xrightarrow{\log_3} t \log_3 \left(\frac{96}{100}\right) = \log_3 \frac{1}{3}$$

$$(5\log_3 2 + \log_3 3) - 2 = -\log_3 3 \to t\left(5\times\frac{3}{10} + 0.48 - 2\right) = -0.48 \to -0.02t \qquad \boxed{t = 24}$$

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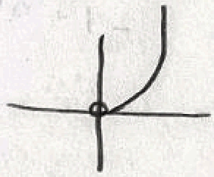
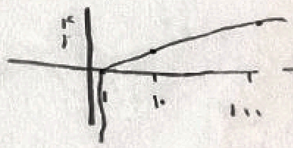
۱۰)

$$y = 9^{\log_3 x} \to x > 0 \to x^{\log_3 9} \to x^2$$



$$y = \log x^2 \to 2\log_{10} x \to$$

$x > 0$



x	y
1	0
10	2
100	4