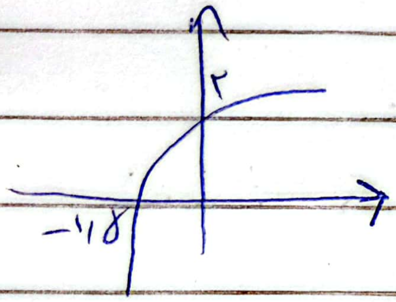
۱- تمارین صفحه ۲۵ ۱۹,۷۵ بهاره سرای یازدهم تجربی A

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

$(a+c)b = ?$



$1 - \log_c^{-b} = 2$

$\log_c^{-b} = -1$

$\frac{1}{c} = -b \rightarrow b = \frac{-1}{c}$ ۲

$\log_c^{-1.5a - b} = 1 \rightarrow c = -1.5a - b$

$b + c = -1.5a$

$\frac{-3}{2} = -1.5a \rightarrow a = 1$

$b + c = \frac{-3}{2} \rightarrow c = \frac{-1}{b}$

$b - \frac{1}{b} = \frac{-3}{2} \rightarrow \frac{b^2 - 1}{b} = \frac{-3}{2} \rightarrow 2b^2 - 2 + 3b = 0$

$2b^2 + 3b - 2 = 0$

$b = \frac{-3 \pm \sqrt{25}}{4} = \frac{-3 \pm 5}{4}$

$b = \frac{1}{2}$ غق

$b = -2$ قق

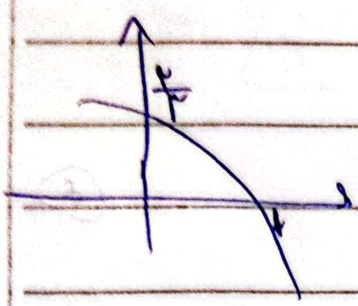
$c > 0$ غق $c = -2 \leftarrow \frac{1}{2} + c = \frac{-3}{2}$

قق $c = \frac{1}{2} \leftarrow -2 + c = \frac{-3}{2}$

$(a+c)b = \left(1 + \frac{1}{2}\right) \cdot -2 = \frac{3}{2} \times -2 = \boxed{-3}$

$$f(x) = 1 + c \times 3^{a+bx}$$ (۲)

$$f(-1) = ?$$



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

$$3^{a+b} \times c = -1$$

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

$$3^{a} \times c = \frac{-1}{3}$$

$$3^{a+b} \times c = -1 \rightarrow 3^{a} \times 3^{b} \times c = -1 \rightarrow \frac{-1}{3} \times 3^{b} = -1$$

$$3^{b} = 3$$

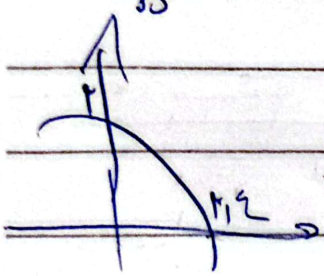
$$b = 1$$

$$f(x) = 1 + c \times 3^{a+x}$$

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

$$y = c + \log_{5}^{(ax+b)}$$ (۳)

$$\frac{a}{b} = ?$$



$$c + \log_{5}^{2.4a+b} = 0$$

$$- \quad c + \log_{5}^{b} = 2$$

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$$\log_{5}^{2.4a+b} - \log_{5}^{b} = -2$$

$$\log_{5}^{2.4a} \times \log_{5}^{b} - \log_{5}^{b} = -2$$

$$\log_{5}\frac{2.4a+b}{b} = -2$$

$$5^{-2} = \frac{2.4a+b}{b} \rightarrow \frac{1}{25} = \frac{2.4a+b}{b} \rightarrow \quad b = 25b + 2.4a \times 25$$

موضوع: ______ تاریخ: / /

$$۲۴b = -۲٫۱۴a \times ۲۸$$

$$b = -\frac{a}{۱۰} \times ۲۸ \to \frac{b}{a} = -۲٫۵ = \frac{-۲۵}{۱۰}$$

$$\frac{a}{b} = \frac{-۱۰}{۲۵} = \boxed{\frac{-۲}{۵}}$$

۴) $f(x) = \log_{۴}^{(|x^۲-۲|-x)}$

$$|x^۲-۲|-x > ۰$$

$$|x^۲-۲| > x$$

$$x^۲-۲ > x \to x^۲-x-۲>۰ \to (x-۲)(x+۱)=۰$$

$$x=۲ \quad x=-۱$$

$$\begin{array}{ccccc} & -۱ & & ۲ & \\ + & \phi & - & \phi & + \end{array}$$

① $D_f \; (-\infty,-۱)\cup(۲,+\infty)$

$$|x^۲-۲| > x \to -x^۲+۲ > x$$

$$x^۲+x-۲<۰$$

$$(x+۲)(x-۱)<۰$$

$$x=-۲ \quad x=۱$$

$$\begin{array}{ccccc} & -۲ & & ۱ & \\ + & \phi & - & \phi & + \end{array}$$

② $D_f = (-۲,۱)$

① $\cup$ ② $\Rightarrow D_f = (-\infty,۱)\cup(۲,+\infty)$

5

$$f(x) = 2 + 2^{b-ax}$$
$$g(x) = -x^2 - 3x + 8$$
$x = 1$

$$f^{-1}(10) = -1$$
$$2b - a = ?$$

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

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$$f^{-1}(10) = -1 \rightarrow f(-1) = 10$$
$$f(-1) = 2 + 2^{b+a} = 10$$
$$2^{b+a} = 8 = 2^3$$
$$b + a = 3$$

$$b - a = 1$$
$$b + a = 3$$

$$2b = 4 \rightarrow b = 2 \rightarrow a = 1$$
$$2b - a = 2 \times 2 - 1 = \boxed{3}$$

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

6

$$f(3) = ?$$
$$-2 + \left(\frac{1}{2}\right)^{A+B} = 0 \rightarrow \frac{1}{2}^{A+B} = 2 = \left(\frac{1}{2}\right)^{-1}$$
$$A + B = -1$$
$$-2 + \frac{1}{2}^{2A+B} = 2 \rightarrow \frac{1}{2}^{2A+B} = 4 = \left(\frac{1}{2}\right)^{-2} \qquad 2A + B = -2$$

$$A+B=-۱$$
$$۲A+B=-۲$$

$$A=-۱ \quad , \quad B=۰$$

$$f(۳)=-۲+\left(\frac{۱}{۲}\right)^{-۱\times ۳+۰}=-۲+\left(\frac{۱}{۲}\right)^{-۳}=-۲+۸=\boxed{۶}$$

$$A(t)=A_0\times k^{\frac{t}{m}}$$ ۷

$$A(t)=A_0\times\left(\frac{۸}{۹}\right)^{t}$$

$$\frac{۱}{۶}=\left(\frac{۸}{۹}\right)^{t}$$

$$\log\frac{۱}{۶}=t\log\frac{۸}{۹}$$

$$\cancel{\log_{۱۰}^{۱}}-\log_{۱۰}^{۶}=t\log_{۱۰}^{۸}-\log_{۱۰}^{۹}$$ ۳

$$-\log_{۱۰}^{۶}=t\left(\log_{۱۰}^{۸}-\log_{۱۰}^{۹}\right)$$

$$-\frac{\log_{۵}^{۶}}{\log_{۵}^{۱۰}}=t\times\left(\frac{\log_{۵}^{۸}}{\log_{۵}^{۱۰}}-\frac{\log_{۵}^{۹}}{\log_{۵}^{۱۰}}\right)$$

$$\boxed{\begin{array}{l}\log_{۲}^{۵}=\frac{۲۴}{۱۰}\rightarrow\log_{۵}^{۲}=\frac{۱۰}{۲۴}=\frac{۵}{۱۲}\\ \log_{۳}^{۵}=\frac{۱۴}{۱۰}\rightarrow\log_{۵}^{۳}=\frac{۱۰}{۱۴}=\frac{۵}{۷}\end{array}}$$

$$\frac{-\left(\log_{۵}^{۲}+\log_{۵}^{۳}\right)}{\left(\log_{۵}^{۲}+\log_{۵}^{۵}\right)}=t\times\left(\frac{۳\log_{۵}^{۲}}{\log_{۵}^{۲}+\log_{۵}^{۵}}-\frac{۲\log_{۵}^{۳}}{\log_{۵}^{۲}+\log_{۵}^{۵}}\right)$$

$$-\frac{\left(\frac{۵}{۱۲}+\frac{۵}{۷}\right)}{\left(\frac{۵}{۱۲}+۱\right)}=t\times\left(\frac{۳\times\frac{۵}{۱۲}}{\frac{۵}{۱۲}+۱}-\frac{۲\times\frac{۵}{۷}}{\frac{۵}{۱۲}+۱}\right)$$

تاریخ: / /

$$-\frac{\frac{95}{84}}{\cancel{\frac{17}{12}}} = t \times \frac{\frac{15}{12} - \frac{10}{7}}{\cancel{\frac{17}{12}}}$$

$$-\frac{95}{84} = t \times \frac{-15}{84}$$

$$95 = t \times 15 \rightarrow t = \frac{95}{15} h \times 60 = \boxed{380\ min}$$

$$100 - 12/5 = 87/5$$

⑧

$$A(t) = A_0 \times k^{\frac{t}{n}}$$

$$A(t) = A_0 \times \left(\frac{87/5}{100}\right)^t$$

$$A(t) = A_0 \times \left(\frac{875}{1000}\right)^t$$

$$\frac{1}{7} = \left(\frac{875}{1000}\right)^t$$

$$\frac{1}{7} = \left(\frac{7}{8}\right)^t$$

$$\log_3 \frac{1}{7} = t \log_3 \frac{7}{8}$$

$$\boxed{\begin{array}{l} \log_2 3 = \frac{16}{10} \\ \rightarrow \log_3 2 = \frac{10}{16} = \frac{5}{8} \\ \log_7 3 = \frac{6}{10} \\ \rightarrow \log_3 7 = \frac{10}{6} = \frac{5}{3} \end{array}}$$

۶

$$-\log_3 7 = t(\log_3 7 - \log_3 8)$$

$$-\log_3 7 = t(\log_3 7 - 3\log_3 2)$$

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

$$-\frac{5}{3} = t\left(\frac{5}{3} - \frac{15}{8}\right)$$

$$-\frac{5}{3} = t \frac{-5}{24} \rightarrow t = \frac{-\frac{5}{3}}{-\frac{5}{24}} = 8$$ هفته

$$\boxed{8 \times 7 = 56 \text{ روز}}$$

تاریخ:

۹)

$A(t) = A_0 \times k^{\frac{t}{m}}$

$A(t) = A_0 \times \left(\frac{96}{100}\right)^t$

$\frac{100}{3} = 100 \times \left(\frac{96}{100}\right)^t$

$\frac{1}{3} = \left(\frac{96}{100}\right)^t$

$-\log 3 = t\left(\log \frac{96}{100}\right)$

$-\log 3 = t\left(\log 2^5 \times 3 - \log 100\right)$

$-0/48 = t\left(5\log 2 + \log 3 - 2\right)$ ۵

$-0/48 = t\left(5 \times 0/3 + 0/48 - 2\right)$

$-0/48 = -t \times 0/02$

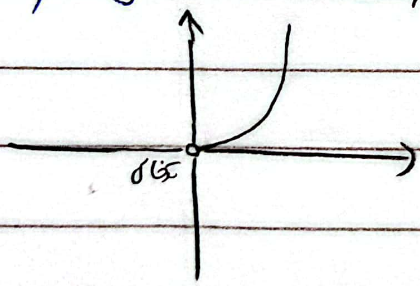
$t = \frac{0/48}{0/02} = \frac{48}{2} = 24$ روز

۱۰)

الف) $y = 9^{\log_3 x} = x^{\log_3 9} = x^{2\log_3 3} = x^2$

$D_f = x > 0$

$x \neq 0$



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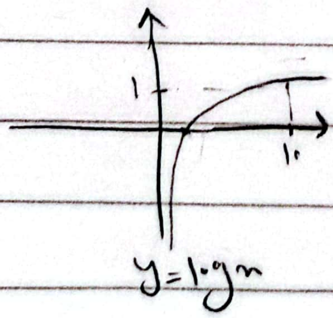
ب) $y = \log x^2 = 2\log x$

$x > 0$

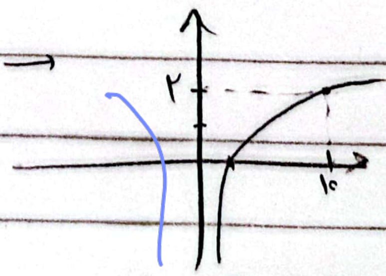
$x \neq 0$

$D_f = \mathbb{R} - \{0\}$



$y = \log x$

$(1, 0)$ $(10, 1)$



$y = 2\log x$

$(1, 0)$ $(10, 2)$