۱۹٫۲۵

سارا ساسانی - یازدهم دختر A - تکلیف شماره ۲۵

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$(1/5, 0) \to 1 - \log_c^{(-1/5a-b)} = 0 \Rightarrow \log_c^{(-1/5a-b)} = 1 \Rightarrow c^1 = -1/5a - b$

$\underbrace{b+c}_{-\frac{3}{2}} = -1/5a \Rightarrow -\frac{3}{2} = -\frac{3}{2}a \Rightarrow a = 1 \Rightarrow y = 1 - \log_c^{(x-b)}$

$(0, 2) \to 1 - \log_c^{-b} = 2 \Rightarrow \log_c^{-b} = -1 \to \frac{1}{c} = -b \quad b + c = -\frac{3}{2} \Rightarrow$

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

$\Delta = 9 - 4(2)(-2) = 25 \quad \frac{-3 \pm 5}{4}$ ↗ $\frac{1}{2} \to b = -2$ ↘ -2 غ ق ق

$(a+c)b = -3$

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$(1, 0) \to 1 + c \times 3^{a+b} = 0 \Rightarrow c \times 3^{a+b} = -1$

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

$\} b = 1$

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

۳-

$(0, 2/4) \to c + \log_5^{2/4a+b} = 0 \Rightarrow -c = \log_5^{2/4a+b} \Rightarrow 5^{-c} = 2/4a + b$

$(0, 2) \to c + \log_5^b = 2 \to \log_5^b = 2 - c \Rightarrow 5^{2-c} = b \Rightarrow$

$5^{-c} - 5^{2-c} = 2/4a \Rightarrow 5^{-c}(1-25) = 2/4a \Rightarrow a = -10 \times 5^{-c}$

$\frac{a}{b} = \frac{-10 \times 5^{-c}}{25 \times 5^{-c}} = -0/4$

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$y = \log_4^{(|x^2-2|-x)} \Rightarrow |x^2-2| - x > 0 \Rightarrow |x^2-2| > x \Rightarrow x^2 - 2 > x$ یا $x^2 - 2 < -x \Rightarrow$

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$x^2 - x - 2 > 0 \Rightarrow x > 2$ یا $x < -1 \quad I$

$x^2 + x - 2 < 0 \Rightarrow x > -2$ یا $x < 1 \quad II$

$\} I \cup II \quad (-\infty, 1) \cup (2, +\infty)$

۵-

$$f(x)=2+2^{b-ax},\quad g(x)=-x^2-3x+8 \Big\}\ x=1 \rightarrow 2+2^{b-a}=4 \Rightarrow 2^{b-a}=2 \Rightarrow b-a=1$$

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

$$\frac{\begin{array}{l} b+a=3 \\ b-a=1 \end{array}}{b=2,\ a=1}$$

$$2b-a=3$$

(۵)

۶-

$$f(x)=-2+\left(\frac{1}{2}\right)^{Ax+B},\quad y=x^2-x \Big\}\ x=1 \Rightarrow -2+\left(\frac{1}{2}\right)^{A+B}=0 \Rightarrow \left(\frac{1}{2}\right)^{A+B}=2 \Rightarrow A+B=-1$$

$$x=2 \Rightarrow -2+\left(\frac{1}{2}\right)^{2A+B}=2 \Rightarrow \left(\frac{1}{2}\right)^{2A+B}=4 \Rightarrow 2A+B=-2$$

$$\frac{\begin{array}{l} 2A+B=-2 \\ -A-B=1 \end{array}}{A=-1,\ B=0}$$

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

(۵)

۷-

$$A_n=\left(\frac{8}{9}\right)^n \times A_0$$

A_n: مقدار باقی مانده — A_0: جرم اولیه

$$\frac{1}{6}A_0=\left(\frac{8}{9}\right)^n \times A_0 \Rightarrow \frac{1}{6}=\left(\frac{8}{9}\right)^n \Rightarrow 6=\left(\frac{9}{8}\right)^n \xrightarrow{\log_2}$$

$$\log_2 5=2.4 \Rightarrow \log_5 2=\frac{1}{2.4}$$
$$\log_3 5=1.4 \Rightarrow \log_5 3=\frac{1}{1.4}$$
$$\Big\}\ \log_2 3=\frac{2.4}{1.4}=\frac{12}{7}$$

(۱,۷۵)

$$\log_2\left(\frac{9}{8}\right)^n=\log_2 6 \Rightarrow n\log_2\frac{9}{8}=\log_2 6 \Rightarrow n=\frac{\log_2 6}{\log_2 \frac{9}{8}}=\frac{\log_2 3+\log_2 2}{\log_2 9-\log_2 8}=\frac{1+\frac{12}{7}}{\frac{24}{7}-3}=\frac{19}{3}$$

($\log_2 3=\frac{12}{7}$, $\log_2 2=1$, $\log_2 9=2\log_2 3=\frac{24}{7}$, $\log_2 8=3$)

$$\frac{19}{3}\times 60=380$$

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$$A_n=\left(\frac{7}{8}\right)^n \times A_0 \qquad \frac{1}{7}\times A_0=\left(\frac{7}{8}\right)^n \times A_0 \Rightarrow \frac{1}{7}=\left(\frac{7}{8}\right)^n \Rightarrow 7=\left(\frac{8}{7}\right)^n$$

از طرفین $\log_3$

$$\log_7 3=0.6 \Rightarrow \log_3 7=\frac{10}{6}=\frac{5}{3}$$

(۱,۷۵)

$\log_{۲}^{۳} = ۱,۶ \Rightarrow \log_{۳}^{۲} = \frac{۱۰}{۱۶} = \frac{۵}{۸}$

$\frac{\log_{۳}^{۷}}{} = \log_{۳}\left(\frac{۸}{۷}\right)^{n} \Rightarrow \frac{۱۰}{۶} = n\log_{۳}\frac{۸}{۷} \Rightarrow \frac{۵}{۳} = n\left(\log_{۳}^{۸} - \log_{۳}^{۷}\right) \Rightarrow$

$\frac{۱۰}{۶}$

$\frac{۵}{۳} = n(\underbrace{۳\log_{۳}^{۲}}_{\frac{۵}{۸}} - \underbrace{\log_{۳}^{۷}}_{\frac{۵}{۳}}) \Rightarrow \frac{۵}{۳} = n(\underbrace{\frac{۱۵}{۸} - \frac{۵}{۳}}) \Rightarrow \frac{۵}{۳} = n \times \frac{۵}{۲۴} \Rightarrow n = ۸$

$۸ \times ۷ = ۵۶$

۹ـ

$(۰,۹۶)^{n} \times A = \frac{۱}{۳}A \Rightarrow (۰,۹۶)^{n} = \frac{۱}{۳} \Rightarrow \left(\frac{۱۰۰}{۹۶}\right)^{n} = ۳ \xrightarrow{\log_{۱۰}}$

$\log\left(\frac{۱۰۰}{۹۶}\right)^{n} = \underbrace{\log ۳}_{۰,۴۸} \Rightarrow n\log\frac{۹۶}{۱۰۰} = ۰,۴۸ \Rightarrow n(\underbrace{\log ۱۰۰}_{۲} - \log ۹۶) = ۰,۴۸ \Rightarrow$

$n[۲ - (\log ۳ + \underbrace{\log ۳۲}_{\underbrace{۵\log ۲}_{۰,۳}})] = ۰,۴۸ \Rightarrow n[۲ - (۱,۵ + ۰,۴۸)] = ۰,۴۸ \Rightarrow$

(۲)

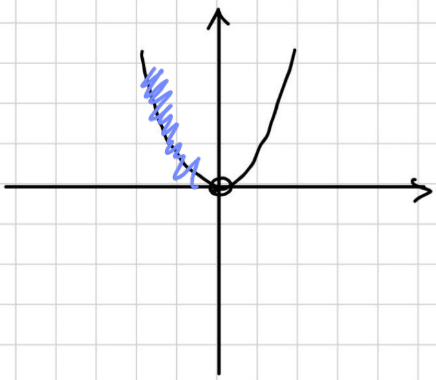
$۰,۰۲n = ۰,۴۸ \Rightarrow n = ۲۴$

۱۰ـ

الف)

$y = ۹^{\log_{۳}^{x}} = x^{\log_{۳}^{۹}} = x^{۲}$

$D_f = (۰, +\infty)$



(۱,۷۵)

ب)

$y = \log x^{۲}$