19,5

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طاها ... - یازدهم ... - تکلیف ۲۸

۱- $x=0 \rightarrow y = 1 - \log_c^{-b} = 2 \ , \ c>0 \Rightarrow \log_c^{-b} = -1 \ , \ b = -\frac{1}{c}$ (۲)

$b + c = \frac{-3}{2} \rightarrow -\frac{1}{c} + c = -\frac{3}{2} \Rightarrow c^2 + \frac{3}{2}c - 1 = 0 \Rightarrow 2c^2 + 3c - 2 = 0 \rightarrow c^2 + 3c - 4 = 0$

$c = \frac{1}{2} , \cancel{-2}$

$x = -1.5 \Rightarrow y = 1 - \log_c^{-1.5a-b} = 0 \Rightarrow \log_c^{-1.5a+b} = 1$ $\quad \Downarrow \quad b = -2$ ✓

$-1.5a - b = c \rightarrow -1.5a + 2 = \frac{1}{2} \Rightarrow -1.5a = -1.5 \Rightarrow a = 1$ ✓ $\quad (a+c)b = -2 \times \frac{3}{2} = -3$ ✓

۲- $x=0 \quad f(0) = 1 + c \times 3^a = \frac{2}{3} \Rightarrow c \times 3^a = -\frac{1}{3}$

$x=1 \quad f(1) = 1 + c \times 3^{a+b} = 0 \Rightarrow c \times 3^a \times 3^b = -1 \Rightarrow \frac{-1}{3} \times 3^b = -1 \Rightarrow 3^b = 3 , b = 1$ (۲)

$x=-1 \quad f(-1) = 1 + c \times 3^{a-b} = 1 + \frac{c \times 3^a}{3^b} \rightarrow 1 - \frac{1}{9} = \frac{8}{9}$ ✓

۳- $x=0 \quad y = c + \log_5^b = 2 \Rightarrow -\log_5^b + 2 = c$

$x = 2.4 \quad y = c + \log_5^{2.4a+b} = 0 \rightarrow 2 - \log_5^b + \log_5^{2.4a+b} = 0 \Rightarrow \log_5^{2.4a+b} - 2$ (۲)

$\log_5^{2.4a+b} = \log_5^{\frac{b}{25}} \Rightarrow 2.4a + b = \frac{b}{25} \Rightarrow a = -\frac{2}{5}b \ , \ \frac{a}{b} = \frac{-2}{5}$ ✓

۴- $f(x) = \log_4^{|x^2-2|-x} \Rightarrow |x^2-2| - x > 0 \rightarrow x \geq \sqrt{2}$ یا $x \leq -\sqrt{2}$ I

$\rightarrow -\sqrt{2} < x < \sqrt{2}$ II (۲)

$x^2 - 2 > x \Rightarrow x^2 - x - 2 > 0$ $\quad$ (−۱ ، ۲ : + | − | +) $\xrightarrow{\cap I} (-\infty, -\sqrt{2}] \cup (2, +\infty)$

$(-\infty, 1) \cup (2, +\infty)$ ✓

$x^2 - 2 < x \Rightarrow x^2 + x - 2 < 0$ $\quad$ (−۲ ، ۱ : + | − | +) $\xrightarrow{\cap II} (-\sqrt{2}, 1)$

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

$f^{-1}(10) = -1 \rightarrow f(-1) = 10$ $\rightarrow 2 + 2^{b+a} = 8 = 2^3 \Rightarrow b + a = 3$ $\quad b = 2 , a = 1$ ✓ (۲)

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

$2b - a = 4 - 1 = 3$ ✓

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

$x=2 \rightarrow 2 = -2 + (\frac{1}{2})^{2A+B} \rightarrow (\frac{1}{2})^{2A+B} = 4 \ , \ 2A + B = -2$ (۲)

$f(x) = -2 + (\frac{1}{2})^{-x} \longrightarrow -2 + 8 = 6$ ✓

۷- $(\frac{8}{9})^{\frac{t}{60}} m = \frac{1}{6} m \Rightarrow \frac{t}{60} \log \frac{8}{9} = \log \frac{1}{6} \rightarrow \frac{-t}{60} \log \frac{9}{8} = -\log 6 \Rightarrow \frac{t}{60} \log \frac{9}{8} = \log 6$

$\frac{t}{60} = \frac{\log 6}{\log \frac{9}{8}} = \frac{\log_5 6}{\log_5 \frac{9}{8}} = \frac{\log_5 2 + \log_5 3}{2\log_5 3 - 3\log_5 2} \longrightarrow \frac{\frac{1}{2.4} + \frac{1}{1.4}}{\frac{2}{1.4} - \frac{3}{2.4}} = \frac{3.8}{0.6} = \frac{19}{3}$ ✓ (1,75)

$\frac{19}{3} \times 60 = 380$ دقیقه

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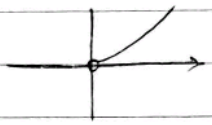
۸- $(\frac{۷}{۸})^{\frac{t}{۷}} = \frac{۱}{۷}$ $\rightarrow (\frac{۸}{۷})^{\frac{t}{۷}} = ۷ \Rightarrow (\frac{t}{۷})\log \frac{۸}{۷} = \log ۷$ (۲)

$\frac{t}{۷} = \frac{\log ۷}{\log \frac{۸}{۷}} = \frac{\log ۷}{\log ۸ - \log ۷} = \frac{\frac{۱}{\log ۳}}{\frac{۳}{\log ۳} - \frac{۱}{\log ۳}} = \frac{۱}{۲} = ۸ \rightarrow \frac{t}{۷} = ۸ , t = ۵۶$ ✓

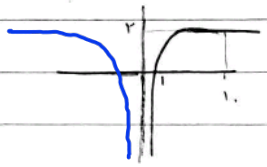
۹- $(\frac{۲۴}{۲۵})^{t} = \frac{۱}{۳} \times ۱ = (\frac{۹۶}{۱۰۰})^{t} = \frac{۱}{۳} \rightarrow t \log \frac{۹۶}{۱۰۰} = \log \frac{۱}{۳} \Rightarrow (t)(\log ۹۶ - ۲) = -\log ۳$

$(t)(۵\log ۲ + \log ۳ - ۲) = -\log ۳ \rightarrow t(۱/۵ + ۰/۷۸ - ۲) = -(۰/۴۸) \Rightarrow t = ۲۴$ ✓ (۲)

۱۰- $y = ۹^{\log_۳ x} = x^{\log_۳ ۹} = x^{۲} \rightarrow x > ۰ \rightarrow Df = (۰, +\infty)$ ✓



$y = \log x^{۲} = ۲\log x \rightarrow x \neq ۰ \rightarrow Df = \mathbb{R} - \{۰\}$ (۱/۷۵)



دامنه $\mathbb{R}$ است!

Parsian