۱.

سیدعلی خوشنازان

$f = 1 - \log_c (ax - b)$

$f(0) = 1 - \log_c^{-b} = ۲ \Rightarrow \log_c^{-b} = -1 \Rightarrow -b = \frac{1}{c} \Rightarrow -bc = 1$

$f(-۱/۵) = 1 - \log_c^{-۱/۵a - b} = 0 \Rightarrow \log_c^{-۱/۵a-b} = 1 \Rightarrow c = -۱/۵a - b$

$-b = \frac{1}{c} \Rightarrow b = \frac{-1}{c}$ $\quad b + c = -\frac{۳}{۲} \Rightarrow c - \frac{1}{c} = -۱/۵ \Rightarrow (c = -۲)$ غ ق ق

$(c = \frac{1}{۲})$ ق ق $\Rightarrow c = \frac{1}{۲}$

$b = \frac{-1}{\frac{1}{۲}} = -۲ \Rightarrow b = -۲$

$c = -۱/۵a - b \Rightarrow \frac{1}{۲} - ۲ = -۱/۵a \rightarrow a = 1$

$f(۹) = 1 - \log_{\frac{1}{۲}}^{x+۲}$

$a = 1$ $\quad b = -۲$ $\quad c = \frac{1}{۲}$ $\Rightarrow (۱/۵) \times -۲ = -۳$

۲- [illegible]

$f(0) = 1 + c \times ۳^a = \frac{۲}{۳}$ $\quad c \times ۳^a = \frac{-1}{۳}$

$f(-1) = 1 + c \times ۳^{a-b} \Rightarrow 1 + c \times ۳^a \times \frac{1}{۳} =$

$f(1) = 1 + c \times ۳^{a+b} = 0 \Rightarrow c \times ۳^{a+b} = -1$

$c \times ۳^a = -\frac{1}{۳}$

$c \times ۳^a = -۳^{-1} \Rightarrow c = -۳^{-1} \times ۳^{-a} = -۳^{-1-a} = c$

$-۳^{-1-a} \times ۳^{a+b} = -1 \Rightarrow ۳^{b-1} = 1 \Rightarrow b = 1$

$1 + \frac{-1}{۳} \times \frac{1}{۳} = \frac{۸}{۹}$ = جواب

۳-

$f(۲/۴) = c \Rightarrow c + \log_۵^{۲/۴a+b} = 0$

$f(0) = ۲ \longrightarrow c + \log_۵^b = ۲$

کم کردن دو معادله لازم $\Rightarrow \log_۵ b - \log_۵^{۲/۴a+b} = ۲ \Rightarrow \log_۵^{\frac{b}{۲/۴a+b}} = ۲$

$b = ۲۵b + ۶۰a \Longleftarrow \frac{b}{۲/۴a+b} = ۲۵$

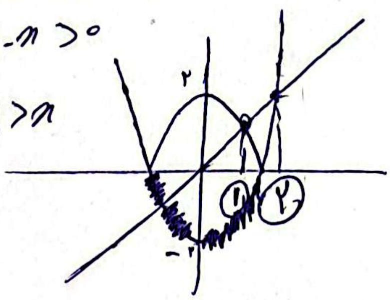
$-۲۴b = ۶۰a \Rightarrow \frac{a}{b} = \frac{-۲۴}{۶۰} = \frac{-۲}{۵}$

۴-

$\log_۴^{|x^۲-۲|-x}$

$|x^۲-۲| - x > 0$

$|x^۲-۲| > x$



$x^۲ - ۲ = x \Rightarrow x^۲ - x - ۲ = 0$

$(x-۲)(x+1)$

$۲ \quad -1$

$۲ - x^۲ = x \Rightarrow x^۲ + x - ۲ = 0$

$(x+۲)(x-1) = 0$

$x = -۲$

$x = 1$

با توجه به نمودار $\Rightarrow (-\infty, 1) \quad (۲, +\infty)$

Scanned with CamScanner

-۵

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

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

$\Rightarrow b=2,\ a=1 \qquad 2b-a=3$

-۶

سید علی ترشیزیان ۱۲

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

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

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

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

$f(3)=6$

-۷

$\left(\frac{8}{9}\right)^{x} = \frac{1}{6} \Rightarrow x = \frac{\log_5 2+\log_5 3}{2\log_5 3-3\log_5 2} \Rightarrow x = \frac{\frac{1}{2.4}+\frac{1}{1.4}}{2\times\frac{1}{1.4}-3\times\frac{1}{2.4}} = \frac{\frac{3.8}{3.36}}{\frac{4.8-4.2}{3.36}} = \frac{3.8}{0.6} = \frac{38}{6}$

ساعت $\frac{38}{6} = \frac{38}{6}\times 60 = 380$

-۸

$\left(\frac{7}{8}\right)^{x} = \frac{1}{7} \Rightarrow x = \frac{\log_3 7}{3\log_3 2-\log_3 7} = \frac{\frac{1}{0.6}}{3\times\frac{1}{1.6}-\frac{1}{0.6}} = \frac{\frac{1}{0.6}}{\frac{1.8-1.6}{1.6\times 0.6}} = \frac{1}{\frac{0.2}{1.6}} = 8$

هفته $8 \qquad 8\times 7 = 56$ روز

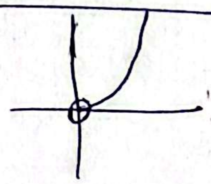
-۹

$\left(\frac{96}{100}\right)^{x} = \frac{1}{3} \Rightarrow x = \frac{\log 3}{2-5\log 2-\log 3} = \frac{0.48}{2-1.5-0.48} = \frac{0.48}{0.02} = 24$

-۱۰

b پایه $x>0$

$g = \log_9 x^3 = \log_x 9^3 = x^2$



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$g = \log_x x^2$

$2\log x =$