۱)

$\log_c^{-1.5a-b} = 1 \Rightarrow c = -\frac{3}{2}a - b \Rightarrow \frac{1}{2} = -\frac{3}{2}a + 2 \Rightarrow a = 1$ ✓ (۲)

$\log_c^{-b} = -1 \Rightarrow -b = \frac{1}{c}$

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

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

-2 غ ق ق , $\frac{1}{2}$ ✓

$(1 + \frac{1}{2}) \times (-2) = -3$ ✓

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۲) (۲)

$1 + c \times 3^{a+b} = 0 \Rightarrow c \times 3^{a+b} = -1 \Rightarrow \underbrace{c \times 3^a}_{-\frac{1}{3}} \times 3^b = -1 \Rightarrow 3^b = 3$

$b = 1$ ✓

$1 + c \times 3^a = \frac{2}{3} \Rightarrow c \times 3^a = -\frac{1}{3}$

$1 + \underbrace{c \times 3^a}_{-\frac{1}{3}} \times 3^{-1} = 1 - \frac{1}{9} = \frac{8}{9}$ ✓

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۳) (۲)

$c + \log_5^{2.4a+b} = 0 \Rightarrow 5^{-c} = 2.4a + b \Rightarrow \frac{1}{5^c} = 2.4a + b$

$c + \log_5^b = 2 \Rightarrow 5^{2-c} = b \qquad \frac{5^2}{5^c} = b \Rightarrow 5^c = \frac{25}{b}$

$\frac{b - 25b}{25} = 2.4a \longleftarrow \frac{b}{25} = 2.4a + b$

$\frac{-\cancel{24}b}{\cancel{25}} = \cancel{2.4}a \Rightarrow \frac{-2b}{5} = a \Rightarrow \frac{a}{b} = \frac{-2}{5}$ ✓

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۴) (۲)

$\log_4 (|x^2-2|-x)$

$|x^2-2|-x > 0$

$-\sqrt{2} \qquad \sqrt{2}$

$x^2-2-x > 0 \qquad | \qquad 2-x^2-x > 0 \qquad | \qquad x^2-2-x > 0$

$-1 \quad 2 \qquad\qquad +1 \quad -2 \qquad\qquad -1 \quad 2$

$x < -\sqrt{2} \qquad -\sqrt{2} > x > 1 \qquad x > 2$

~~$D_f = (-\infty, -\sqrt{2}) \cup (-1, \sqrt{2}) \cup (2, +\infty)$~~

$\boxed{D_f = (-\infty \quad 1) \cup (2 \quad +\infty)}$ ✓

۱۵)

$f(x)=۲+۲^{b-ax}$

$g(x)=-x^۲-۲x+۸$

$\Rightarrow ۲+۲^{b-a}=۴$

$۲^{b-a}=۲ \Rightarrow b-a=۱$

$f(-۱)=۱۰ \Rightarrow ۲+۲^{b+a}=۱۰ \qquad ۲^{b+a}=۸ \qquad b+a=۳$

$b-a=۱$

$۲b=۴$

$b=۲ \qquad a=۱$

$f-۱=۳$

(۲)

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۱۶)

$f(x)=-۲+\left(\frac{۱}{۲}\right)^{Ax+B}$

$y=x^۲-x$

$-۲+\left(\frac{۱}{۲}\right)^{A+B}=0 \Rightarrow \left(\frac{۱}{۲}\right)^{A+B}=۲ \Rightarrow A+B=-۱$

$-۲+\left(\frac{۱}{۲}\right)^{۲A+B}=۲ \Rightarrow \left(\frac{۱}{۲}\right)^{۲A+B}=۴ \qquad ۲A+B=-۲$

$A=-۱ \qquad B=0$

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

(۲)

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۱۷)

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

$\log_۵ ۳=\frac{۱}{۱/۴}=\frac{۵}{۷} \qquad \log_۵ ۲=\frac{۱}{۲/۴}=\frac{۵}{۱۲}$

(۲)

$\log_۵\left(\frac{۸}{۹}\right)^{t}=\log_۵ (۶)^{-۱}$

$t\log_۵\left(\frac{۸}{۹}\right)=-\log_۵ ۶$

$t(\log_۵ ۸-\log_۵ ۹)=-(\log_۵ ۲+\log_۵ ۳)$

$t(۳\log_۵ ۲-۲\log_۵ ۳)=-(\log_۵ ۲+\log_۵ ۳)$

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

$t\left(\frac{۵}{۴}-\frac{۱۰}{۷}\right)=-\left(\frac{۵}{۱۲}+\frac{۵}{۷}\right)=t\left(\frac{۳۵-۴۰}{۲۸}\right)=-\left(\frac{۳۵+۶۰}{۸۴}\right)$

$-\frac{۵}{۲۸}t=-\frac{۹۵}{۸۴}$

$\boxed{t=\frac{۱۹}{۳}}$

$\frac{۱۹}{۳}\times۶۰=۳۸۰\ min$

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۱۸)

$f(t)=\cancel{A}\left(\frac{۷}{۸}\right)^{t}=\frac{۱}{۷}\cancel{A}$

$\log_۳\left(\frac{۷}{۸}\right)^{t}=\log_۳\left(۷\right)^{-۱}$

$\log_۳ ۷=\frac{۱}{۰/۶}=\frac{۵}{۳}$

(۲)

$\log_۳ ۲=\frac{۱}{۱/۶}=\frac{۵}{۸}$

$t(\log_۳ ۷-۳\log_۳ ۲)=-(\log_۳ ۷)$

$t\left(\frac{۵}{۳}-\frac{۱۵}{۸}\right)=-\left(\frac{۵}{۳}\right)$

$t\left(\frac{-۵}{۲۴}\right)=-\frac{۵}{۳} \qquad \frac{t}{۸}=۱ \qquad t=۸ \qquad ۸\times۷=۵۶$

(9

$$\left(\frac{24}{25}\right)^n = \frac{1}{3} \Rightarrow n\log\left(\frac{24}{25}\right) = \log\left(\frac{1}{3}\right)$$

$$n(\log 24 - \log 25) = -(\log 3)$$

$$n(3\log 2 + \log 3 - 2\log 5) = -(0.48)$$

$$n(0.9 + 0.48 - 1.4) = -(0.48)$$

$$(-0.02)n = -(0.48)$$

$$n = 24$$

$$\log \tfrac{10}{2} = \log 5$$

$$1 - 0.3 = 0.7$$

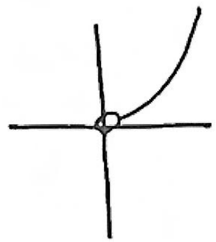
$$\log 5 = 0.7$$

2

(10

$$y = 9^{\log_3 x} = x^{\log_3 9} = x^2$$

$$x > 0$$



2

$$y = \log x^2 = 2\log|x|$$