

1
$$r = 1 - \log_{\frac{1}{c}}(-b) \quad \log_{\frac{1}{c}}(-b) = -1 \quad \frac{1}{c} = -b \quad \textcircled{1}$$

3
$$\log_{\frac{1}{c}}(-b) = -1 \quad c + (-1) = -\frac{1}{c} \rightarrow c = \frac{-1}{\frac{1}{c}} \times \checkmark \Rightarrow b = -1$$

5
$$a = 1 - \log_{\frac{1}{c}}(1 + a + r) \Rightarrow a = -1 \Rightarrow (a + c)b = (\frac{1}{c} - 1)(-1) = 1$$

7
$$\frac{1}{p} = 1 + c \times p^a \Rightarrow \frac{1}{p} = c \times p^a \Rightarrow a = -1 \quad c = -1 \quad \textcircled{2}$$

9
$$0 = 1 + c \times p^{a+b} \quad a = -1, c = -1 \quad b = 1$$

11
$$f(-1) = 1 + (-1 \times p^{-1}) = 0$$

13
$$r = c + \log_{\frac{1}{c}} b \quad c = r - \log_{\frac{1}{c}} b \quad \textcircled{3}$$

15
$$0 = c + \log_{\frac{1}{c}}(r + a + b) \quad 0 = (r - \log_{\frac{1}{c}} b) + \log_{\frac{1}{c}}(\frac{1}{c} a + b)$$

17
$$\log_{\frac{1}{c}} b - \log_{\frac{1}{c}} r_0 = \log_{\frac{1}{c}}(\frac{1}{c} a + b) \quad \log_{\frac{1}{c}} \frac{b}{r_0} = \log_{\frac{1}{c}} \frac{1}{c} a + b$$

19
$$\frac{b}{r_0} = \frac{1}{c} a + b \Rightarrow \frac{a}{b} = \frac{-r}{r_0} = -r$$

21
$$|x^r - r| > x \quad |x^r - r| > x \quad \textcircled{4}$$

23
$$\left\{ \begin{array}{l} x^r - r > x \quad x^r - x - r > 0 \quad \begin{array}{c} -1 \quad r \\ \oplus \quad | \quad - \oplus \end{array} \\ x^r - r < -x \quad x^r + x - r < 0 \quad \begin{array}{c} -r \quad 1 \\ + \oplus \quad + \end{array} \end{array} \right\} n \rightarrow (-r, -1)$$

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$$f(1) = 10$$

-9

$$r + r^{b+a} = 10 \quad r^{b+a} = 10 - r \Rightarrow a+b = 3$$

$$x=1 \rightarrow 1 - r + 10 = r + r^{b-a} \quad r = r + r^{b-a} \Rightarrow b-a = 1$$

$$\begin{cases} b=2 \\ a=1 \end{cases}$$

$$r^{b-a} = r - 1 = 3$$

$$x=1 \rightarrow 1 - 1 = 0 = -r + r^{-A-B}$$

$$-(A+B) = 1$$

-9

$$x=r \rightarrow r - r = 0 = -r + r^{-A-B}$$

$$\begin{cases} A+B = -1 \\ -rA - B = r \end{cases} \Rightarrow \begin{cases} A = -1 \\ B = 0 \end{cases}$$

$$f(3) = -r + r^3 = 9$$

$$\frac{1}{9} r = \left(\frac{1}{9}\right)^h r \rightarrow \left(\frac{1}{9}\right)^h = \frac{1}{9} \xrightarrow{\log_9} -\log_9 9 = h \log_9 \frac{1}{9} = -V$$

$$-\log_9 9 = h(\log_9 1 - \log_9 9) \Rightarrow -(\log_9 3 + \log_9 3) = h(3 \log_9 3 - 2 \log_9 9)$$

$$-\left(\frac{1}{3} + \frac{1}{3}\right) = h\left(\frac{3}{3} - \frac{2}{1}\right) \Rightarrow h = \frac{2}{3}$$

$$\frac{2}{3} \times 9 = 6 \text{ min}$$

$$\log_{10} 1000 = 3 \Rightarrow \frac{1000}{1000} = \frac{V}{10}$$

$$\Rightarrow \left(\frac{V}{10}\right)^h = \frac{1}{10}$$

$$\log_{10} 2 \rightarrow h \log_{10} \frac{2}{10} = \log_{10} \frac{1}{10} \quad h(\log_{10} 2 - 1) = -1 \Rightarrow h = \frac{1}{1-\log_{10} 2}$$

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$$\frac{1}{9} = h\left(\frac{1}{9} - \frac{3}{18}\right) \Rightarrow h = 1 \rightarrow 1 \times 10 = 10$$

$$\frac{1}{x} x' = x \left(\frac{9.8}{100} \right)^h \quad -9$$

$$\log \frac{1}{x} = h \log 9.8$$

$$-\log x = h (\log 9.8 - \log 100) \rightarrow -0.48 = h (1.98 - 2)$$

$$\delta \log 2 + \log 3$$

$$\Rightarrow \underline{h = 2.4}$$

$$\delta(0.3) + 0.48 = 1.98$$

$$\text{الف) } x \log x^4 = x^4 \quad x > 0$$



$$\text{ب) } 2 \log x$$

