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$$n^a = m$$

$$(mn)^b = m^n$$

$$\frac{(a+b)^b}{n} = \frac{a+b}{n}$$

$$b = \frac{a+b}{a+b} = 1 + \frac{a}{a+b}$$

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الف) $\log \frac{1}{x} < 0$ $x > 1$ $D_f = (0, +\infty) \setminus \{1\}$

ب) $(1) x^2 - x - 5 > 0$ $x \in \mathbb{R} \setminus \{1\}$ $D_f = (-\infty, -1) \cup (-2, +\infty)$

(۲) $x^2 - 1 < 1$

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$$\log a + \log a = 2 \log a$$

$$\log a + \frac{1}{\log a} = 5$$

$$t + \frac{1}{t} = 5$$

$$t^2 - 5t + 1 = 0$$

$$t = 1$$

$$\log a = 1$$

$$a = 10$$

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$$(\log a - \log c) x^2 + (2 \log a) x - (\log a + \log c) = 0$$

$$\Delta = 4 \log^2 a + 4 (\log a - \log c) (\log a + \log c) = 4 \log^2 a + 4 (\log^2 a - \log^2 c) = 8 \log^2 a - 4 \log^2 c$$

$$\Delta = 4 (2 \log^2 a - \log^2 c)$$

$$\log a = 1 - \log c$$

$$\log c = 1 - \log a$$

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$$\log 14 = \log 7 + \log 2$$

$$\log 7 \rightarrow \log 7 = \log 2 + \log 3.5$$

$$\log 2 = \frac{1}{2} \log 4$$

$$\log 3.5 = \log \frac{7}{2} = \log 7 - \log 2$$

$$\log 14 = \log 7 + \log 2 = \log 2 + \log 3.5 + \log 2 = 2 \log 2 + \log 3.5$$

$$\log 14 = \frac{2}{2} \log 4 + \log 3.5 = \log 4 + \log 3.5 = \log 14$$

$$\log_{10} 4 = \frac{\log 4}{\log 10} = \frac{\log 2 + \log 2}{1 + \log 2} = \frac{1 + \log 2}{1 + \log 2} = 1$$

$$\frac{2/4}{1/4} = \frac{2/4}{1/4} = 2$$

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$$\log_2 2 + \log_2 2 = m \quad \log_2 2 = m-1 \quad \frac{m-1}{2} = \log_2 2$$

$$\log_2 2 = \frac{1}{2} (\log_2 2 + \log_2 2) = \frac{1}{2} \log_2 2 = \frac{m-1}{2} + 1 = \frac{m+1}{2}$$

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$$\left(\frac{a}{r}\right)^{2r} = \left(\frac{1}{r}\right)^{2r} \rightarrow \log_{10} \left(\frac{a}{r}\right)^{2r} = \log_{10} \left(\frac{1}{r}\right)^{2r} \rightarrow 2r \log_{10} \frac{a}{r} = 2r \log_{10} \frac{1}{r}$$

$$\log_{10} \frac{a}{r} = \log_{10} \frac{1}{r} = \frac{1}{r}$$

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$$\log_2 a = \log_2 b = \frac{1}{2} (\log_2 a + \log_2 b) = \frac{1}{2} \log_2 a = \log_2 a$$

$$\log_2 b - \log_2 a = \log_2 \frac{b}{a} = \log_2 \frac{b}{a} = \log_2 \frac{b}{a} = \log_2 \frac{b}{a}$$

$$\log_2 \frac{b}{a} = \log_2 \frac{b}{a} = \log_2 \frac{b}{a} = \log_2 \frac{b}{a}$$

$$\log_2 \frac{b}{a} = \log_2 \frac{b}{a} = \log_2 \frac{b}{a} = \log_2 \frac{b}{a}$$

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