

$$\#10 \quad 2(\log_9 2 + \log_9 x) - 3(\log_9 3 + \log_9 y)$$

$$= 2\log_9 2 + 2\log_9 x - 3\log_9 3 - 3\log_9 y$$

$$= \log_9 2^2 + \log_9 x^2 - \log_9 3^3 - \log_9 y^3$$

$$\log_9 \left(\frac{4x^2}{27y^3} \right)$$

$$\#4 \quad \log \left(\frac{w^5 x}{y z^9} \right) \quad \ln$$

$$5 \log w + \log x - \log y - 9 \log z$$

$$\boxed{\text{OR}} \quad 5 \log w + \log x - (\log y + 9 \log z)$$

$$\#17 \quad \log(x+5) - \log(x-2) = \log 5$$

$$\cancel{\log\left(\frac{x+5}{x-2}\right)} = \cancel{\log 5}$$

$$\cancel{\frac{x+5}{x-2} = \frac{5}{1}}$$

$$-4x = -15$$

$$x+5 = 5x-10$$

$$x = \frac{15}{4}$$

$$\#3 \quad {}_{10}\log(x+1) = {}_{10}2$$

$$10^{\log(x+1)} = 10^2$$

$$x+1 = 100$$

$$\boxed{x=99}$$

$$\#9 \quad \log_2 X + \log_2 (X+2) = 3$$

$$\log_2 (X(X+2)) = 3$$

$$2 \log_2 (X^2 + 2X) = 3 \cdot 2$$

$$X^2 + 2X = 8$$