

$$\log(AB) = \log A + \log B$$

recall $\left\{ \begin{array}{l} \log A = y \\ 10^y = A \end{array} \right\}$

$$\begin{aligned} \text{if } \log A = y & \quad 10^y = A \\ \log B = x & \quad 10^x = B \end{aligned} \quad \text{then } \log(AB) \\ = \log(10^x \cdot 10^y) \\ = \log(10^{x+y}) \\ = x + y \\ = \log A + \log B$$

$$\begin{aligned} \underline{42b.} \quad -3 + e^{x+1} &= 2 + e^{x-2} \\ -3 + e^x \cdot e &= 2 + e^x \cdot e^{-2} \\ e^x \cdot e - e^x \cdot e^{-2} &= 5 \\ e^x(e - e^{-2}) &= 5 \\ e^x &= \frac{5}{e - e^{-2}} \\ x &= \ln\left(\frac{5}{e - e^{-2}}\right) \end{aligned}$$

p218
4.

$$8 \text{ hrs. } Q_0 \rightarrow 4Q_0$$

doubling time is $\frac{1}{2}$ hour.

$$Q_0 \xrightarrow{1 \text{ hr}} 4Q_0 \xrightarrow{1 \text{ hr}} 16Q_0$$