

EPRO W (J)

120K2PH

$$V = \Sigma T \Delta \theta$$

$$V_T = V_A$$

$$\Delta V$$

$$W = 0$$

120BAPH

$$P = \Sigma T \Delta \theta$$

$$\Delta V$$

$$W = P \cdot \Delta V$$

$$P_1 = P_2 = P$$

$$W = P \Delta V = P(V_2 - V_1) = P_2 V_2 - P_1 V_1 = nRT_2 - nRT_1 \Rightarrow$$

120BAPH

$$T = \Sigma T \Delta \theta$$

$$W = nR \Delta T$$

$$P_1 V_1 = P_2 V_2 \Rightarrow$$

$$\frac{V_2}{V_1} = \frac{P_1}{P_2}$$

$$W = nRT \ln \frac{V_2}{V_1}$$

$$\frac{V_2}{V_1} = \frac{P_1}{P_2}$$

$$W = P_1 V_1 \ln \frac{V_2}{V_1}$$

$$W = P_2 V_2 \ln \frac{V_2}{V_1}$$

EP. P-V

$$W = E_{TB}$$

$$E_{TB_{TEIP}} = a^2$$

$$E_{TB_{OP.PAP}} = a \cdot b$$

$$E_{TB_{TPIR}} = \frac{b \cdot u}{2}$$

$$E_{TB_{TRAN}} = \frac{(b+u)u}{2}$$

$$\log_x y = a$$

$$x^a = y$$

$$\begin{array}{l} x=10 \\ \cancel{x=2} \\ x=e \end{array}$$

$$\log_{10} 100 = 2 \quad 10^2 = 100$$

$$\log_{10} 1000 = 3 \quad 10^3 = 1000$$

$$e = 2,71 \quad \log_e = \ln$$

$$\ln e = 1 \quad e^1 = e$$

$$\ln e^y = y \quad e^y = e^y$$

$$1. \ln 1 = 0 \quad e^0 = 1$$

$$2. \ln(a \cdot b) = \ln a + \ln b$$

$$e^{a+b} = e^a \cdot e^b$$

$$3. \ln \frac{a}{b} = \ln a - \ln b$$

$$\frac{e^a}{e^b} = e^{a-b}$$

$$4. \ln x^y = y \cdot \ln x$$

$$\ln \frac{V_2}{V_1} = \ln 2 = 0,6931 \approx 0,7$$

$$= \ln 3 = 1,1$$

$$= \ln 4 = \ln 2^2 = 2 \ln 2 \approx 2 \cdot 0,7$$

$$= \ln 9 = \ln 3^2 = 2 \ln 3 = 2 \cdot 1,1$$

$$= \ln \left(\frac{1}{3} \right) = \ln 3^{-1} = (-1) \ln 3 = -1 \cdot 1,1$$