

ORIGIN := 1

$$B := \begin{pmatrix} -834.2 & -153.4 \\ -153.4 & -104.2 \end{pmatrix} \quad P := 3.65 \quad T := 323 \quad R := 83.14 \quad P_1 := 0.123$$

$$H := 2939 \quad V_1 := 18$$

$$\phi(y) := \left[\begin{array}{l} n \leftarrow 2 \\ B_{\text{mix}} \leftarrow \sum_{i=1}^n \sum_{j=1}^n (y_i \cdot y_j \cdot B_{i,j}) \\ \text{for } i \in 1..n \\ \phi_i \leftarrow \exp \left[\frac{P}{R \cdot T} \cdot \left[2 \cdot \sum_{j=1}^n (y_j \cdot B_{i,j}) - B_{\text{mix}} \right] \right] \\ \phi \end{array} \right]$$

$$y := \begin{pmatrix} 0.3 \\ 0.7 \end{pmatrix} \quad x := \begin{pmatrix} 0.9 \\ 0.1 \end{pmatrix}$$

Given

$$P_1 \cdot \exp \left(\frac{B_{1,1} \cdot P_1}{R \cdot T} \right) \cdot \exp \left[V_1 \cdot \frac{(P - P_1)}{R \cdot T} \right] \cdot x_1 = y_1 \cdot P \cdot \phi(y)_1$$

$$H \cdot x_2 = y_2 \cdot P \cdot \phi(y)_2$$

$$x_1 + x_2 = 1$$

$$y_1 + y_2 = 1$$

$$\begin{pmatrix} x \\ y \end{pmatrix} := \text{Find}(x, y)$$

$$x = \begin{pmatrix} 0.99882 \\ 1.18203 \times 10^{-3} \end{pmatrix} \quad y = \begin{pmatrix} 0.03475 \\ 0.96525 \end{pmatrix}$$