$$\text{ORIGIN} := 1$$

$$f_1(x, y) := \ln(x) + 12.88949 - \frac{3643.31}{y - 33.424} + (1 - x)^2 \cdot (2.771 - 0.00523y)$$

$$f_2(x, y) := \ln(1 - x) + 10.1457 - \frac{2665.54}{y - 53.424} + x^2 \cdot (2.771 - 0.00523y)$$

$$x := 0.5 \qquad y := 350$$

$$\text{Sol} := \left| \begin{array}{l} \Delta\max \leftarrow 100 \\ \text{while} \quad \Delta\max > 10^{-5} \\ \quad \left| \begin{array}{l} J \leftarrow 100 \cdot \begin{pmatrix} \dfrac{f_1(1.01x, y) - f_1(x, y)}{x} & \dfrac{f_1(x, 1.01y) - f_1(x, y)}{y} \\ \dfrac{f_2(1.01x, y) - f_2(x, y)}{x} & \dfrac{f_2(x, 1.01y) - f_2(x, y)}{y} \end{pmatrix} \\ F \leftarrow \begin{pmatrix} f_1(x, y) \\ f_2(x, y) \end{pmatrix} \\ \Delta \leftarrow -J^{-1} \cdot F \\ \Delta\max \leftarrow \max(|\Delta|) \\ x \leftarrow x + \Delta_1 \\ y \leftarrow y + \Delta_2 \end{array} \right. \\ \begin{pmatrix} x \\ y \end{pmatrix} \end{array} \right.$$

$$\begin{pmatrix} x \\ y \end{pmatrix} := \text{Sol} = \begin{pmatrix} 0.46019 \\ 326.69657 \end{pmatrix}$$

Alternative Solution

$$x := 0.5 \qquad y := 350$$

Given

$$x \cdot \exp\left(16.59158 - \frac{3643.31}{y - 33.424}\right) \cdot \exp\left[(1 - x)^2 \cdot (2.771 - 0.00523y)\right] = 40.532$$

$$(1 - x) \cdot \exp\left(14.25326 - \frac{2665.54}{y - 53.424}\right) \cdot \exp\left[x^2 \cdot (2.771 - 0.00523y)\right] = 60.798$$

$$\begin{pmatrix} x \\ y \end{pmatrix} := \text{Find}(x, y) = \begin{pmatrix} 0.460196 \\ 326.696547 \end{pmatrix}$$