Problem. Using the Müller-Brown surface in the domain -1.5 ≤ x ≤ 1.0 and -0.5 ≤ y ≤ 2.0 write a Runge-Kutta 4 program that starting in the first order saddle point located in (-0.822, 0.624) integrates the steepest dencent curve joining this point and the minimum. The initial condition is the eigenvector of the Hessian matrix of this point with negative eigenvalue, (x(0), y(0)) = (-0.822, 0.624); $\mathbf{g}$(x(0),y(0)) = $\mathbf{v}_0$.

Müller-Brwon surface:

$$E(x, y) = \sum_{i=1}^{4} A_i \exp(a_i(x - x_i^0))^2 + b_i(x - x_i^0)(y - y_i^0) + c_i(y - y_i^0)^2$$

$$\begin{aligned}
\text{with} \quad A &= (-200, -100, -170, 15) \\
a &= (-1, -1, -6.5, 0.7) \\
b &= (0, 0, 11, 0.6) \\
c &= (-10, -10, -6.5, 0.7) \\
x^0 &= (1, 0, -0.5, -1) \\
y^0 &= (0, 0.5, 1.5, 1).
\end{aligned}$$