Name: _____

VIP ID: _____

Problem	Max. points	Your points
1	25	
2	25	
3	25	
4	25	
Total	100	

Write down your date of birth in the form `mm/dd/YY`, and set m to be the value of the month, d the value of the day, and Y the value of those two last digits of the year you were born (for instance, today it would be $m = 10$, $d = 12$, $Y = 17$). With that choice of parameters, consider the point $(x_0, y_0) = (0, Y)$ and the Rosenbrock (d, m) function:

$$\mathcal{R}_{d,m}(x, y) = (d - x)^2 + m(y - x^2)^2.$$

We would like to use the three methods covered in class to compute approximations to the strict global minimum of $\mathcal{R}_{d,m}(x, y)$, all of them starting at the same initial guess $(x_0, y_0) = (0, Y)$:

1. Perform one step of the Steepest descent method. Compute the distance from the point obtained to the target.

2. Perform one step of the Newton-Raphson method. Compute the distance from the point obtained to the target.

3. Perform *two* steps of the Broyden method, with $\boldsymbol{A}_0 = \operatorname{Hess} \mathcal{R}_{d,m}(x_0, y_0)$. Compute the distance from the last point obtained to the target.

4. Perform *two* steps of the Broyden method with $\boldsymbol{A}_0 = \begin{bmatrix} 2 & 0 \\ 0 & 2m \end{bmatrix}$. Compute the distance from the last point obtained to the target.