Homework #3 — Due in class, October 17, 2019

Problem NW-4.1

Let

$$f(\bar{\mathbf{x}}) = 10(x_2 - x_1^2)^2 + (1 - x_1)^2$$

At $\bar{\mathbf{x}}_0 = (0, -1)$ draw the contour lines of the quadratic model assuming that $B = \nabla^2 f(x)$. Draw the family of solutions* of trust-region subproblem as the radius varies from $\Delta = 0$ to $\Delta = 2$. Repeat at $\bar{\mathbf{x}}_1 = (0, 0.5)$.

* Compute the solutions "almost exactly" using some method we have discussed (or will discuss), or some *ad hoc* brute-force method. The question is really **"find, as best as you can, the optimal path."**