Homework Assignment for Week 16

Assigned Dec 30, 2011.

1. Section 10.1: Problems 5, 6.

2. As in the scalar case, where knowing the approximate value of $f'(x_*)$ would help to design a fixed point iteration for solving the equation $f(x) = 0$ by finding a suitable equivalent form $x = g(x)$ by introducing a free parameter α. Try apply this technique to the following system of equations

$$\begin{aligned} 1x_1 + 2x_2 + 0.03 * \sin(x_1 + x_2) &= 4 \\ 5x_1 + 6x_2 + 0.07 * \cos(x_1 - x_2) &= 8 \end{aligned}$$

   and find a convergent fixed point iteration. If the equivalent form is not obvious to you, to use the trick as in the scalar case, but take α to be a matrix.

3. Section 10.2: Problems 7(a,b), 10.