

Name _____

Exam 2: Math 3214, Part II; Due: Monday, 04/07

In both Problem 7 and Problem 8 detailed work should be shown for the first two steps, at least. For the remaining steps it will be sufficient to list the iterates $\begin{pmatrix} x_k \\ y_k \end{pmatrix}$.

7. Consider the system of equations

$$\begin{aligned} e^x - (x + 2y) - 1 &= 0; \\ e^y - (2x + y) - 2 &= 0. \end{aligned}$$

Using $x_0 = y_0 = 0$ as the starting point, apply Newton's method to find a solution correct to 4 decimal places.

8. Rewrite the equations of Problem 7 in appropriate fixed point form and, with the same starting point, $x_0 = y_0 = 0$, use fixed point iteration to find a solution, again to 4 decimal places accuracy. Do you get the same solution as in Problem 7?