Answer the questions below. You may answer in the space provided. You may use the back or a separate sheet of paper if you need more space. You are to work in groups of no more than four people. Make sure to enter the names of your groupmates below.

Name: _____

Section: _____

Group Members: _____

1. Consider the linear system
$$\begin{cases} x_1 - 2x_2 = 3 \\ 3x_1 + 2x_2 = 1. \end{cases}$$
   (a) (5 points) Calculate the first two Jacobi iterates for an approximation of a solution to the system with an initial estimate of $x_1 = x_2 = 0$.

   (b) (5 points) Calculate the first two Gauss-Seidel iterates for an approximation of a solution to the system with an initial estimate of $x_1 = x_2 = 0$.

2. A flower shop offers small, medium, and large arrangements of flowers containing roses, daisies, and tulips. A small arrangement contains one rose, three daisies, and three tulips. A medium arrangement contains two roses, four daisies, and six tulips. Each large arrangement contains four roses, eight daisies, and six tulips. The shop manager noticed that on one day, the shop used 24 roses, 50 daisies, and 48 tulips. How many of each size of arrangement did the flower shop sell?
   (a) (3 points) In a linear system modeling this situation, what will each unknown correspond to? Each equation?

   (b) (4 points) Solve the linear system for this problem by finding the reduced row echelon form of the augmented matrix modeling this situation.

3. (3 points) Balance the chemical equation for photosynthesis: $CO_2 + H_2O \to C_6H_{12}O_6 + O_2$.