Name: NetID: \_\_ \_\_ \_\_ \_\_ \_\_ \_\_ \_\_ \_\_ \_\_

**Instructions:** Turn in your work for the activities (this handout) at the **end of tutorial**.

**Draw a picture.** Label the flow of species in and out of the reactor.

**Mathematical Model.** Propose a model with a partner. We will not grade this for correctness.

**Mathematical Model.** Record the solution we **discussed as a class**.

**Perform degree of freedom analysis.**

**Write the model as a linear system.** Let

**Solve the model in Python.** Record your answer below assuming a feed basis of 100 mole total.

= = =

= = =

What is the condition number of your linear system? \_\_\_\_\_\_\_\_\_\_\_\_ (Round to 2 decimals.)

Based on the condition number, is your model linearly independent: Yes. No.

Based on the condition number, predict the maximize impact of a modest error on the calculated flowrates. Specifically, fill in: