17-355/17-655/17-819: Program Analysis

In-Class Exercises

February 5, 2019 **Andrew ID: _____**

1. Consider the following (incorrect) flow function for zero analysis:

   $$F_z[\ x := y + z\ ](\sigma) = \sigma\ [x \mid\!\!\rightarrow Z]$$

   Give an example of a program and a concrete trace that illustrates that the flow function is unsound.

2. Specify an input state for the unsound flow function and show using that input state that the flow function is not locally sound.

3. Prove the local soundness case for $f_Z[x := y](\sigma) = \sigma\ [x \rightarrow \sigma(y)]$