Step 1 – Intro. Show that \( \frac{|x - \tilde{x}|}{|x|} \leq \frac{\rho \kappa(A)}{1 - \rho \kappa(A)} \) where \( \rho = \|\Delta\|/|A| \).

Step 2 – Framework. Confirm the bounds in the framework section of the derivation. Why don't we worry about errors in \( A \) or errors in \( b \) when we setup the problem?

Step 3 – GE with Errors. Read through the relationship between \( A^{(k)} \) and \( B^{(k)} \). (Stop when you reach footnote 2.) What is \( A^{(1)} \) and \( B^{(1)} \)?

Step 4 – GE with Errors. Read through the end of the paragraph with footnote 2. Explain why there are two cases in your own words or diagram.

Step 5 – GE with Errors. Read through the end of page 2 and the first paragraph on page 3. Do you agree that we have \( A + E = \tilde{L}\tilde{U} \) in the upper-triangular region?
Step 6 – GE with Errors. Read through the bound on $E_{ij}$ for the lower-triangular region. Did you spot any index mistakes?

Step 7 – GE with Errors. Explain how the two equations $B_{ij}^{(1)} = 0 + \sum_{k=1}^{j} \tilde{L}_{i,k} B_{k,j}^{(k)} + E_{ij}$ and $B_{ij}^{(1)} + E_{ij} = B_{ij}^{(i)} + \sum_{k=1}^{l} \tilde{L}_{i,k} B_{k,j}^{(k)}$ justify $A + E = \tilde{L}\tilde{U}$.

Step 8 – Bounding. Rework the equations in $\mu_{ij}^{(k+1)} = B_{ij}^{(k+1)} \left( \frac{g_{ij}^{(k)}}{1 + g_{ij}^{(k)}} \right) - \tilde{L}_{i,k} B_{k,j}^{(k)} \theta_{ij}^{(k)}$.

Step 9 – Bounding. Explain why we have the bound $|\mu_{ij}^{(k+1)}| \leq |B_{ij}^{(k+1)}| \frac{u}{1-u} + |B_{ij}^{(k)}| u$ i.e. why $1 - u$?

Step 10 – Bounding. Work through the rest of the section. Why did we use a growth factor $G$?

Step 11 – Growth factor. Prepare an explanation for the significance of the smoothed analysis result.