

Names:

1. Find a series of contractions for the example graph shown in class that do not yield an optimal solution.

2. Derive a non-trivial upper bound (dependent only on constants and $n = |V|$) on the probability that an edge in the optimal minimum cut is selected in the first iteration of the algorithm.

3. Derive a non-trivial upper bound (dependent only on constants, $n = |V|$, and iteration number (j)) on the probability that an edge in the optimal minimum cut is selected in iteration $j + 1$ of the algorithm, assuming that no edges from the optimal minimum cut were selected in any previous iterations.

4. Demonstrate that amplification can be used to make the algorithm succeed with high probability (i.e., The probability the algorithm succeeds goes to 1 as n goes to infinity).