1. (Outer most loop):

We will evaluate performance of alternative approaches over different true underlying demand distributions D. The Ds are the outer loop. Easiest to start with Uniform[j,k], with different choices of j, k.

1. (Next set of loops):

Pick different combinations of epsilon, delta, b, h. For now just let epsilon be 10%, 25%. Let delta be 0.05, 0.10. Let (b,h) be (6,6); (3,9); (9,3)

1. Now we have a demand distribution D, eps, delta, b, h. Calculate y\* (for uniform case, this is just = j + (k-j)\*b/(b+h). Calculate C(y\*) (see photo I sent).
2. Now, for i = 1 to NUMREPS, do:
   1. Generate N iid samples from D, where N is obtained from Theorem 2.2 of Levi et al.)
   2. Obtain y^hat (the optimal SAA-based order quantity) and calculate C(y^hat)
   3. Set SAA\_within\_eps = 1 if C(y^hat) <= (1+eps)\*C(y\*); otherwise set this var to 0.

(note, what Theorem 2.2 of Levi shows is that as NUMREPS approaches infinity, the proportion of SAA\_within\_eps = 1 approaches 1-delta.

* 1. Using the same N samples from this rep, construct a smoothed empirical CDF (I will discuss with you how to do this). Generate M iid simulated samples from this smoothed CDF (use 3 versions of M: M = .75N, M = N, M = 1.25N
  2. For each of these Ms, obtain y^hat(M), and calculate C(y^hat(M)). Do similar step as c for each of these Ms

1. For this set of parameters, return proportions SAA\_within\_eps for the original SAA as well as the simulated-from-smoothed-CDF (using M simulated samples) SAA\_within\_eps(M).
2. Go back to 2.
3. Go back to 1.