Problem 2: Due February 17 at 10:00 AM

1. Demand: $P(Q) = a - bQ$

2. Cost: $C_i(q_i) = c_i q_i$

3. $b \sim logN(\mu, \sigma)$

4. i = 1,2

5. $Q = q_1 + q_2$

The firms' wish to maximize their expected profits. Solve for the set of first-order conditions analytically. Then write a computer program that solves for the optimal quantities given any input vector $(a, c_1, c_2, \mu, \sigma)$ using:

1. Newton's method

2. Broyden's method