Name:

Answer all of the following questions by hand:

1. For each of these either find the answer or state if it does not exist:
   (a) Inverse of 3 mod 10.
   (b) Inverse of 4 mod 10.

2. Compute \([23^{61} \mod 7]\).

3. Compute \([46^{51} \mod 55]\). (Hint: Use the Chinese Remainder Theorem)

4. Let \(G = \mathbb{Z}_{11}^*\)
   (a) Compute the set \(<2>\)
   (b) Compute the set \(<4>\)
   (c) Are all elements of \(G\) generators of \(G\)?