QUIZ 1, VERSION A, MATH103A, SUMMER 2021

1. (5 points) Carefully state Euclid's lemma.

2. (5 points) Find a solution of $[11]_{37}[x]_{37} = [1]_{37}$.

3. (10 points) Find integers x and y such that $\gcd(221, 143) = 221x + 143y$.

4. (5 points) Suppose m and n are positive integers and $f : \mathbb{Z}_n \to \mathbb{Z}_m, f([x]_n) = [x]_m$ is a well-defined function. Prove that $m|n$.

5. (5 points) Prove that $\gcd(7n + 4, 2n + 1) = 1$ for every integer n. (Hint. Use the idea of Euclid's algorithm.)