

MATH 416, HW 1

1. Let $a = 24$, $b = 9$. Write the output of every step in the execution of Euclid's algorithm.
2. Express the number 14600926 (base 10) in binary notation.
3. Verify that the vector space $\ell^2(\mathbb{Z})$ is a vector space, i.e., that it satisfies the "vector space axioms" from page 26 of the text.
4. Let $\langle u, v \rangle = \sum_{i=1}^d u_i v_i$ be the inner norm on the d -dimensional Euclidean vector space \mathbb{R}^d . What is the relation of this inner product and the angle between vectors u and v in \mathbb{R}^d .