

MATH 416, HW 2

1. Implement in Matlab Euclid's algorithm.
2. Find the greatest common divisor of the two numbers 135 797 531 and 1 234 567 890 987 654 321.
3. Find an orthonormal basis for the subspace of  $\mathbb{R}^4$  spanned by the vectors  $x = (1; 0; 0; 0)$ ,  $y = (1; 0; 1; 0)$ , and  $z = (1; 1; 1; 0)$ .
4. Are there matrices  $A, B \in \text{Mat}(2, 2)$  satisfying  $AB + BA = Id$ ? If yes, give an example; if not, explain why.