

MATH 117: Daily Assignment 5

WRITE YOUR NAME HERE

August 6, 2022

See the [daily assignment webpage](#) for due dates, templates, and assignment description. Try to explain your reasoning and justify your computations for every problem. You should not appeal to any theorems that we have not proved yet.

1. Let $V = F^2$ where $F = \mathbb{Z}_5$. Denote the elements of \mathbb{Z}_5 by $0, 1, 2, 3, 4$. A basis for V is given by $B = ((1, 2), (1, 0))$. Define a linear map $L : V^* \rightarrow V^*$ as follows: for any linear functional $f \in V^*$, $L(f)$ is the linear functional satisfying $L(f)(a, b) = f(a + 3b, 4b)$. Compute $[L]_{B^*}^{B^*}$ where B^* is the dual basis of B .