

Math 314 - Spring 2024

Practice problems 1

Quiz: Feb 12 2024

In mathematics you don't understand things. You just get used to them.

— John von Neumann

Practice:

- (1) Suppose Alice is using the Affine cipher with encryption function $E(x) \equiv 23x + 9 \pmod{26}$. What is the ciphertext for the plaintext message HI?
- (2) Using the same encryption function for an affine cipher, $E(x) \equiv 23x + 9 \pmod{26}$ find the equation for the decryption function in the form $D(y) \equiv cx + d$ where c and d are numbers between 0 and 25.
- (3) Suppose you have a known plaintext situation for affine cipher. The plaintext is **quest** and the ciphertext is **ASYWH**. Determine the key (i.e. the encryption function).
- (4) If the Vigenere cipher encrypts the plaintext **practice** to the ciphertext **FLIBJCKD**, what was the key?

Reading:

Sections 1.1-1.5.