Exercises Part 4
Discrete Mathematics

Hans Georg Schaathun

10th August 2015

1 Thursday 2 October

2 Friday 3 October

3 Tuesday 7 October

Exercise 3.1 *What are the decryption functions for the following encryption function?*

$$e_k(x) = x +_{26} k.$$

4 Thursday 9 October

5 Friday 10 October

Exercise 5.1 *Encrypt the string* Hello world *using the affine cipher*

$$e_{k_1,k_2}(x) = k_1 \cdot x + k_2 \mod 26$$

with key $(k_1, k_2) = (12, 3)$.

Exercise 5.2 *Consider the English alphabet* $\mathbb{Z}_{26}$ *and the Scandinavian one* $\mathbb{Z}_{29}$. *What are the zero elements in each of the rings?*

Exercise 5.3 *What are the decryption functions for the following encryption function?*

$$e_{k_1,k_2}(x) = k_1 \times_{26} x +_{26} k_2$$

Which assumptions do you make?

Exercise 5.4 *Encrypt the string* Hello world *using the affine cipher*

$$e_{k_1,k_2}(x) = k_1 \cdot x + k_2 \mod 26$$

with key $(k_1, k_2) = (12, 3)$.