Math 3 - Discrete math (V3020) **Exercises, week 1 (due Sep 9th 2025)**

1. Prove Theorem 1.1.8 from the lecture notes.
2. Prove Theorem 1.1.9 from the lecture notes. (Hint: The Theorem proved in 1. helps here.)
3. Find the greatest common divisor of 42823 and 6409.
4. Prove that the product of three consecutive integers is divisible by 6.
5. Prove that if x and y are odd, then $x^2 + y^2$ is even but not divisible by 4.
6. Prove that $(m, m+n) \mid n$ for all integers m, n both not 0.
7. Write a program (in your programming language of choice) that uses the Euclidean algorithm to determine the greatest common divisor.