

# CS/MATH 278

## Lab 7

**Due on Wednesday Oct 21 at 5:00 PM**

- (a) Write a method that takes as input a natural number  $n$  and determines if  $n$  is a prime number.
- (b) Consider the sequence of prime numbers  $2, 3, 5, 7, 11, 13, 17, \dots$ . Let  $p_i$  denote the  $i^{\text{th}}$  number in the sequence, i.e,  $p_1 = 2, p_2 = 3, p_3 = 5, p_4 = 7, p_5 = 11 \dots$

For  $i > 0$ , let

$$N_i = p_1 * p_2 * \dots * p_i + 1.$$

Professor Erdos claims that for all  $i > 0$ ,  $N_i$  is a prime number. Prove that Professor Erdős is wrong. Write a computer program that produces the smallest counter-example for Professor Erdős' claim.