MATH 467 FACTORIZATON AND PRIMALITY TESTING, FALL TERM 2025, PRACTICE EXAM 1.

Note: Exam 1 will be 9:05-9:55, Wednesday 24th September 2024
Room 0133 Erickson

1. Show that $n|(n-1)!$ for all composite $n > 4$.

2. (i) Show that if m and n are integers of the form $4k+1$, then so is mn. (ii) Show that if $m, n \in \mathbb{N}$, and mn is of the form $4k-1$, then so is one of m and n. (iii) Show that every number of the form $4k-1$ has a prime factor of this form. (iv) Show that there are infinitely many primes of the form $4k-1$.

3. Factorise 4087.

4. Find integers x and y such that $1547x + 2197y = (1547, 2197)$.