MATH 467 FACTORIZATION AND PRIMALITY TESTING, FALL 2025, PROBLEMS 13

Return by Monday 1st December

Submit any code you write to answer these questions.

1. For each number below
(i) $n = 37038381852397$,
(ii) $n = 154326786444342061687677640751301$,
(iii) $n = 234567890234567899234567899234545667778889901 89$,
(iv) $n = 244795203711210084747921311832602284343770500312 6289$,
(v) $n = 595457975987595849574985798595859847594579485795957948594567995 01$,
list the odd primes $p \leq 200$ for which n is a quadratic residue modulo p.

2. Let n be as in (i) above. List the x with $6085000 \leq x \leq 6087000$ for which $|x^2 - n|$ completely factorises into primes $p \leq 200$ and in each case give the factorisation.