

PHILADELPHIA UNIVERSITY
DEPARTMENT OF BASIC SCIENCES

Exam 1

Computational Number Theory

12–11–2009

1. In RSA, Alia selects $n = 1007 = 19 \times 53$ and $e = 5$. Find her decryption key d .
2. In RSA, suppose that $n = 8413$ and it is known that $\phi = 8188$. Factor n using the quadratic formula.
3. Illustrate Fermat factorization using the number $n = 426749$
4. Write $n = 10t + u$. Prove that $13 \mid n$ if and only if $13 \mid t + 4u$.
5. Illustrate the rho method using $n = 8051$.

–Amin Witno