

PHILADELPHIA UNIVERSITY  
DEPARTMENT OF BASIC SCIENCES

**Exam 1**

**Computational Number Theory**

**14–11–2010**

Each solution must be complete in order to receive full credit.

1. In RSA, suppose that  $n = 1649$ . Factor  $n$ , given that  $\phi = 1536$ .
2. Factor  $n = 7169$  using Fermat factorization.
3. Factor  $n = 8051$  using the rho method.
4. Let  $n = 10t + u$ , where  $u$  is the unit digit of  $n$ . Prove that  $17 \mid n$  if and only if  $17 \mid t - 5u$ .

–Amin Witno