Philadelphia University

Department of Basic Sciences

Exam 1 **Number Theory** **19–03–2014**

Solutions must be complete in order to receive full credit.

1. Evaluate $\gcd(m, n)$ and find integers a, b such that $\gcd(m, n) = am + bn$, for the numbers $m = 1254$ and $n = 532$.
2. Find all the integer solutions to the linear equation $27x + 72y = 63$.
3. Prove that $12 \mid n^4 - n^2$ for any integer n.
4. Determine n is prime or composite, using trial division, with $n = 667$.
5. Count how many divisors of the number $n = 11520$.
6. Factor m and n using prime numbers and evaluate $\gcd(m, n)$, for the numbers $m = 435600$ and $n = 457600$.

–Amin Witno

The list of primes below 200.

2	3	5	7	11	13	17	19	23	29
31	37	41	43	47	53	59	61	67	71
73	79	83	89	97	101	103	107	109	113
127	131	137	139	149	151	157	163	167	173
179	181	191	193	197	199				