Philadelphia University

Department of Basic Sciences

Exam 1 **Number Theory** **05–11–2012**

Solutions must be complete in order to receive full credit.

1. Is the number 299 prime or composite? Use trial division.
2. Evaluate $\gcd(18900, 105840)$ by factoring into primes.
3. Evaluate $\gcd(54321, 12345)$ using the Euclidean algorithm.
4. Find all the integer solutions of $28x + 49y = 35$.
5. Prove that $60 \mid n^5 - 5n^3 + 4n$ for any integer n.

–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				