

PHILADELPHIA UNIVERSITY
DEPARTMENT OF BASIC SCIENCES

Exam 1

Number Theory

15-11-2015

1. (3 pts) Prove: $20 \mid m^5 - 5m^3 + 4m$ for any integer m .
2. (4 pts) Find all the integer solutions to the linear equation $343x + 231y = 42$.
3. (3 pts) Prove $n = 409$ is prime or composite.
4. (2 pts) Count how many divisors for $n = 2160$.
5. (4 pts) Evaluate $\gcd(198000, 11880)$ using (a) prime factorization and (b) the Euclidean algorithm.
6. (4 pts) Factor the number $n = 5459$ using the Fermat method.

-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				