

Math 453: Homework # 1

Due Friday, 25 January 2019 in class

In writing your proofs, fully explain all the important steps. Use full and grammatically correct English sentences. Be clear and concise.

Exercise numbers are from the end-of-section exercise sets in the **2002** reissue of *Elementary Number Theory* by James K. Strayer.

1. (5 points) Prove that 5 divides $n^5 + 4n$ for every positive integer n . (*Hint: one way is to use the Division Algorithm*)
2. (5 points) Exercise Set 1.1, # **9**
3. (5 points) Exercise Set 1.2, # **26** (*There is a hint after Appendix E of the book.*)
4. (5 points) Exercise Set 1.2, # **28**
5. (5 points) Exercise Set 1.3, # **44** (*Hint: one way is to use Proposition 1.11*)