

### Math 156: Workshop 3

*Write your solutions neatly, or else points will be deducted. Prove the following.*

1. (p.126 #2) If  $x$  is an odd integer, then  $x^3$  is odd.
2. (p.126 #6) Suppose  $a, b, c \in \mathbb{Z}$ . If  $a|b$  and  $a|c$ , then  $a|(b + c)$ .
3. (p.126 #8) Suppose  $a$  is an integer. If  $5|2a$  then  $5|a$ .
4. (p.126 #14) If  $n \in \mathbb{Z}$ , then  $5n^2 + 3n + 7$  is odd. (Hint: Try cases for even and odd.)
5. (p.127 #20) If  $a$  is an integer and  $a^2|a$ , then  $a \in \{-1, 0, 1\}$ .