

**MA 261 — Homework #3**  
Due in class Friday, September 20

1. Prove Theorem 1.32: Let  $a$ ,  $b$ ,  $n$ ,  $r$ , and  $k$  be integers. If  $a = nb + r$  and  $k|a$  and  $k|b$ , then  $k|r$ .
2. Illustrate the Division Algorithm for  $m = 259$  and  $n = 9$ .
3. Prove Theorem 1.39: Let  $a$  and  $b$  be integers. If there exist integers  $x$  and  $y$  with  $ax + by = 1$ , then  $(a, b) = 1$ .