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 $(a, b) = 1$.