1. Use the Euclidean algorithm to find the greatest common divisor of 1173 and 957, and find integers x and y such that

$$\gcd(1173, 957) = 1173x + 957y.$$

2. Show that if $a, b, c, x, y \in \mathbb{Z}$ with $c \mid a$ and $c \mid b$ then $c \mid ax + by$.

3. (a) Let $m \in \mathbb{N}$ with $m > 1$. Suppose $m \mid (42n + 17)$ and $m \mid (7n + 2)$ for some $n \in \mathbb{Z}$. Find m.

(b) Let $n \in \mathbb{N}$. Show that $2n + 1$ and $3n + 2$ are relatively prime.