1. Assume 4 positive integers a, b, c, $a \neq b$ and $b \neq c$. Please prove for 3 numbers $a^3b - ab^3$, $b^3c - bc^3$, $c^3a - ca^3$, one of them is divisible by 10.
2. Please prove: for whole number a, it is not divisible by 2 and 3, then $24|(a^2 - 1)$.
3. Numbers p and q are prime, and are bigger than 3, please prove $24 \mid (p^2 - q^2)$.
4. $36x + 83y = 1$. If x and y are integers, please find x and y.