(1) Using the Euclidean Algorithm prove that if $gcd(a,b) = 1$ and $a|c, b|c$ then $ab|c$.
(2) Using the Euclidean Algorithm find $gcd(291, 573)$ and integer x, y such that $291x + 573y = gcd(291, 573)$.
(3) (a) Find all *integer* solutions of the equation

$$25x + 10y = 200$$

(b) Find all *natural* solutions of the equation

$$25x + 10y = 200$$