Please print your name: ____________________________

The total is 20 points. No calculator is allowed. Please show your work. Unjustified answer will receive NO credit.

(1) (10pts) Prove $\forall a \in \mathbb{Z} \forall b \in \mathbb{Z} \forall q \in \mathbb{Z} \forall r \in \mathbb{Z} \ (a = q \cdot b + r \rightarrow \gcd(a, b) = \gcd(b, r))$.

(2) (10pts) Find an integer $s$ and an integer $t$ such that $\gcd(401, 11) = 401s + 11t$. 