1. **[10 points]** Let m be an even integer and n be an odd integer. Prove that $m + n$ is an odd integer.

2. **[10 points]** Let a, b and c be integers such that $a \mid b$ and $b \mid c$. Prove that $a \mid c$.

   Example: Suppose $a = 3$, $b = -15$, $c = 90$. Clearly $a \mid b$ and $b \mid c$. We can see as well that $a \mid c$. Your proof needs to show that this will be true for any integers a, b and c satisfying the above conditions.