Problems on Divisibility

Definition 1. *For integers a and b, a divides b if and only if there is some integer k with $b = ak$. Write $a|b$ to mean "a divides b".*

Here are some statements about divisibility to prove. But beware - one of them is false.

1. If a divides b then a^2 divides b^2.
2. If a divides b then a divides $b + a$.
3. If a divides b and a divides c, then a^2 divides bc.
4. If a divides b and a divides c, then a divides $b + c$.
5. If ac divides bc and $c \neq 0$ then a divides b.
6. If a divides b then $-a$ divides b.
7. If a divides b then a divides $-b$.
8. If ab divides c then a divides c.
9. If a divides c and b divides c then ab divides c.
10. If a divides b and a divides $b + c$ then a divides c.