Algebraic geometry : HW 11

1*. Let M, M', and N be modules over a ring R. Show that we have an isomorphism from $(M \oplus M') \otimes N$ to $(M \otimes N) \oplus (M' \otimes N)$ that takes $(m, m') \otimes n$ to $(m \otimes n, m' \otimes n)$ (all tensors are over R).

2*. If M is a module over a ring R and I is an ideal of R, then show that we have an isomorphism from $M \otimes_R R/I$ to M/IM (where IM consists of sums of elements of the form im, with $i \in I$ and $m \in M$) which takes $m \otimes (r + I)$ to $rm + IM$.