

## APPLIED ALGEBRAIC GEOMETRY, SHEET 12

- (1) Show that the maximum of  $(3)_d$  with " $\ell(h) \geq 0$  for  $h \in R_d$  nonnegative on  $X$ " replaced by " $\ell(h) \geq 0$  for  $h \in M_d$ " is greater than or equal than the maximum of  $(4)_{d'}$  for suitable  $d' \geq d$ .
- (2) Suppose I want to compute the rank-one tensor in  $\mathbb{R}^2 \otimes \mathbb{R}^2 \otimes \mathbb{R}^2$  closest to a given tensor, in the norm which coming from the tensor product of the standard inner products on the copies of  $\mathbb{R}^2$ . How would you do this? (Try and implement Lasserre's hierarchy for this problem!)

*Handed out on December 8, to be handed in on December 15.*