MA 765 Homework 6
Due Friday, April 13

1. Show that the ideal of a collection of $2r$ points in linear general position in $\mathbb{P}^r$ is generated by quadrics.
   (Hint: If q lies on every quadric containing the points $p_1, \ldots, p_r$, let $p_1, \ldots, p_k$ be the minimal set such that q is contained in the span of $p_1, \ldots, p_k$, and consider the union of the hyperplane spanned by $p_1, \ldots, \hat{p}_i, \ldots, p_k, p_{a_1}, \ldots, p_{a_{r-k+1}}$ and the hyperplane spanned by the remaining points.)

2. Let C be a curve of genus g and D a divisor of degree $d \geq 2g+2$. Then D defines a map from C to $\mathbb{P}^{d-g}$. Show that the ideal of $C \subset \mathbb{P}^{d-g}$ is generated by quadrics.