

### Exercises, Lecture 2, September 13

- (1a) The Veronese map  $\mathbb{P}^n \rightarrow \mathbb{P}^N$  is given by the complete linear series  $|\mathcal{O}_{\mathbb{P}^n}(m)|$  on  $\mathbb{P}^n$  [17.4.5]. Show that it is a closed embedding.
- (1b) The Segre map  $\mathbb{P}^n \times \mathbb{P}^m \rightarrow \mathbb{P}^N$  is given by the complete linear series  $|\mathcal{O}_{\mathbb{P}^n \times \mathbb{P}^m}(1, 1)|$  on  $\mathbb{P}^n \times \mathbb{P}^m$  [17.4.7]. Show that it is a closed embedding.
- (2) Do (some of) the exercises 17.6.A–C and 17.6.E–H on very ampleness and ampleness.

In exercises (1a) and (1b), one can, for example, use Vakil's 17.4.D.