

[Try to write up solutions and hand them by Nov. 20, 2007. Please work alone.]

- Write up solutions to problems 18, 21, 22, 27, and 31 in the “collection of problems” . If you have trouble with 31, do 30 instead - its easier.
- Show that the duality in problem 27 preserves incidence; i.e., a point  $P \in R^2$  is incident with a line  $\ell \in R^2$  if and only if the dual of  $P$  (a line) is incident with the dual of  $\ell$  (a point). Show that the same statement holds if “incident with” is replaced by “above” and also if it is replaced by “below”.

Investigate the situation for the polar dual and show it preserves incidence but reverses “above” and “below”.