

## MA 765 Homework 5

Due Friday, March 30

Let  $C$  be a curve,  $P$  a point on  $C$ , and let  $D$  be a divisor of rank  $r$  on  $C$ . Let  $D(P)$  denote the coefficient of  $P$  in  $D$ .

1. Show that the set

$$\{\text{ord}_P(f) + D(P) \mid f \in \mathcal{L}(D)\}$$

consists of exactly  $r + 1$  non-negative integers.

If this set is anything other than  $\{0, 1, 2, \dots, r\}$ , we say that  $P$  is an *inflection point* of the linear series  $|D|$ .

2. Show that the linear series  $|D|$  has only finitely many inflection points.